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THE VIGOR AND EXPRESSIVENESS OF OLDER ENGLISH.*

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A new observance has, to a limited extent, obtained a foot-hold in our society, the delivery, namely, of an address at the meeting nearest to the Christmas holidays, which shall not necessarily relate to anthropology, except in its broadest sense, but belong rather to the domain of art or letters, and be, it is hoped, of interest to invited guests as well as to members at this hospitable season. We can for one evening leave our Indian brother at peace—would that he may continue so! with his games and his folk-lore—and attempt an adventure into the regions of poetry or romance. From one point of view this partial apology for the subject of the evening's address is perhaps superfluous, inasmuch as all that relates to the evolution of our noble English language is a legitimate branch of philology, even though the method of treating it may be more literary than technical.

It is probable that most of us in the course of our reading have been led to enquire why it is that modern English, modern good English, is generally more diffuse, less terse, less able to clothe a thought in a few striking words, than its vigorous progenitor, the English of early writers. The subject is a copious one, indeed almost boundless in its capacity for comparison, and cannot admit of more than a sparing consideration within the limits of this evening's address; but it is also one of general interest, and in the discussion which

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may follow, illustrations may be contributed either for or against the views suggested.

You will observe that the phrase employed is "older English," not "old English." It does not refer to the time of Chaucer or of his immediate successors, but, to be precise, my illustrations will be selected from the writers of the Elizabethan age and their followers for the next half century. It must not be supposed that archaic English does not possess the characters of terseness and vigor to a high degree, but the ruggedness of early composition, and, in poetry, the requirements of the rhythm, obliging accentuation of syllables no longer so treated, would make the comparison with modern writings inconvenient and perhaps unconvincing.

Writers are apt to speak of the glories of the Elizabethan period in its wonderful outburst of poetry as if it were peculiarly an English phenomenon. It is to be remembered that this was the era of the revival of letters and the sister arts of sculpture and painting throughout Europe. It was the most splendid period of the *Renaissance*, and Italy above all countries was the seat of the most munificent and successful pursuit of all branches of knowledge. The influence of Italian literature is strikingly evident in the works of the great English writers of the time in question.

The marvelous suddenness and extent of the change which took place in English poetry, and especially in dramatic writing, is a subject of constant interest to the student. The harsh crabbed lines of the Miracle plays, and the Moralities, were followed by attempts at something like dramatic construction, which attained its culminating point in the works of Sackville, Gascoigne, Peele, Lilly, and Nash. Suddenly, like a burst of sunshine, broke forth "Marlowe's mighty line," to be followed in wonderful rapidity by the plays of the masters of the romantic drama—Shakespeare, Ben Jonson, Heywood, Chapman, Beaumont and Fletcher, Webster, Ford, Massinger, Middleton, and other and less distinguished writers. During fifty years and more, from the appearance of Marlowe's Tamburlane, in 1588, which may be regarded as the starting point of the romantic drama, a mass of plays was produced which for brilliancy, pathos, humor, exquisite poetry, and fertility of invention, is unequalled by the literature of any period or of any nation. It was the springtime of the world of English letters, and the reason for its luxuriance is not difficult to discover. The renaissance and the reformation were contemporary phenomena. The former had its origin in Italy

and the latter in Germany. The Italian cared little, comparatively speaking, for the restoration of religious purity, but he fairly reveled in the revival of forgotten arts and learning. England at the period in question shared the benefits of both those great upheavals. Henry the Eighth had introduced the Reformation, and under the milder reign of his great daughter, Englishmen, rejoicing in their new-born freedom of thought and inspired by the masterpieces of classical literature which, in original and translation, came in profusion from Italy, wrote as men never wrote before or since, and filled—

> "The spacious times of great Elizabeth
> With sounds that echo still."

The great characteristic of the Elizabethan drama was its absolute freedom and spontaneity. No censor of the press existed to prune the too glowing expressions, or to expunge passages too daring in their reflections upon great persons. It is not surprising, then, that under conditions such as those which have been hastily sketched, the language should have had the vigor and expressiveness which belonged to its period of youth.

It is a difficult thing to show by quotations, necessarily short, the wonderful change which has been described as taking place in so brief a period in the character of English poetry, but I will attempt it by first reading two or three stanzas from Sackville's Mirror for Magistrates, perhaps altogether the finest poem of immediately pre-Elizabethan times.

The poet, like Dante's hero, is led by a superhuman personage, in this case a goddess, to the infernal regions. This is his personification of Death and War:

> "And by and by a dumb, dead corpse we saw,
> Heavy and cold, the shape of Death aright,
> That daunts all earthly creatures to his law;
> Against whose force in vain it is to fight,
> No peers, no princes, nor no mortal wight,
> No towns, no realms, cities, nor strongest tower,
> But all perforce must yield unto his power.
>
> His dart anon out of the corpse he took,
> And in his hand (a dreadful sight to see)
> With great triumph eftsoons the same he shook,
> That most of all my fears effrayed me;
> His body dight with nought but bones, perdye,
> The naked shape of man there saw I plain,
> All save the flesh, the sinew, and the vein.

Lastly stood War, in glittering arms yclad,
With visage grim, stern looks, and blackly hued;
In his right hand a naked sword he had,
That to the hilt was all with blood imbrued;
And in his left (that kings and kingdoms rued),
Famine and fire he held, and therewithal
He razed towns, and threw down towers and all.

Cities he sacked, and realms that whilom flowed
In honor, glory, and rule above the best,
He overwhelmed, and all their fame devoured,
Consumed, destroyed, wasted, and never ceased
'Till he their wealth, their name, and all oppressed,
His face forehewed with wounds, and by his side,
There hung his targe with gashes deep and wide."

Strongly imaginative this, and full of the love for personifying which, a few years later, Spenser, in his noble poem, carried to perfection. But it is the style, the expression, which is our subject. Only twenty-five years later Marlowe wrote thus:

"It lies not in our power to love or hate,
For will in us is overruled by fate,
When two are stripped, long e'er the course begin,
We wish that one should lose, the other win;
And one especially do we affect
Of two gold ingots, like in each respect;
The reason no man knows, let it suffice,
What we behold is censured by our eyes.
Where both deliberate, the love is slight;
Who ever loved that loved not at first sight?"

You remember how Shakespeare, half tenderly, refers to this passage, where Rosalind says:

"Dead shepherd, now I find thy sawe of might;
'Who ever loved that loved not at first sight?'"

It is, perhaps, hardly just to select this exquisite rhymed passage, full of sweetness, for the comparison. Let us take the blank verse where Tamburlane asks himself, "What is beauty?"

"If all the pens that ever poets held
Had fed the feeling of their master's thoughts,
And every sweetness that inspired their hearts,
Their minds, and muses, on admired themes;
If all the heavenly quintessence they 'stil

From their immortal flowers of poesy,
Wherein, as in a mirror, we perceive
The highest reaches of a human wit;
If these had made one poem's period,
And all combined in beauty's worthiness,
Yet should there hover in their restless heads
One thought, one grace, one wonder, at the least,
Which into words no virtue can digest."

That charming writer, Adelaide Procter, has in our own day expressed a similar thought:

No great Thinker ever lived and taught you
All the wonder that his soul received;
No true Painter ever set on canvas
All the glorious vision he conceived.

Sackville is a fair example of the poets of his day; his style is not more harsh or obscure than that of Surrey, Wyatt, and others of his contemporaries. Marlowe is not the best, although the earliest, of the dramatists of the succeeding period; but what a change in twenty-five years!

In Marlowe's Doctor Faustus there is a passage which shows a grander conception of hell than is to be found in either Milton or Dante. The place of torment pictured by those two great poets was purely material. When Mephistophilis tells Faustus that he was one of the fallen angels cast down into the nether region, the latter says: "How comes it then that thou art out of hell?" Mephistophilis replies:

"Why this is Hell, nor am I out of it;
Think'st thou that I, who saw the face of God
And tasted the eternal joys of Heaven,
Am not tormented with ten thousand Hells
In being deprived of everlasting bliss?"

Apart from the bold originality of thought which marked this period, what subtle causes can be detected to account for this expressiveness of words and style? It is a trite dictum that it is to the Anglo-Saxon that our language owes its beauty and strength. Its strength? yes; but not its tenderness or beauty. It is to the Latin generally that we must look for these qualities. Take an example from Shakespeare; that beautiful description of morning:

"Night's candles are burnt out, and jocund day
Stands tiptoe on the misty mountain's height."

In this perfect picture there are many Saxon words; but who does not see that the one master epithet which gives the feeling to it is the now almost obsolete Latin word *jocund?* The jocund day, the joyous, laughing day, which in its eagerness to brighten the world "stands tiptoe on the misty mountain's height."

The joyousness of morning is well brought in by Chaucer in these lines, slightly modernized to avoid the antique rhythm:

> "The busy lark, the messenger of day,
> Saluteth in her song the morning gray;
> And fiery Phoebus riseth up so bright
> That all the orient laugheth of the sight."

Observe the force of the preposition "of"—"that all the orient laugheth *of* the sight"—partakes and shares in its joyousness.

Compare with this a well-known description of morning by a modern poet:

> "Morn on the mountain, like a summer bird
> Lifts up her purple wing, and in the vales
> The gentle wind, a sweet and passionate wooer,
> Kisses the blushing leaf, and stirs up life
> Within the solemn woods of ash deep-crimsoned,
> And silver beech, and maple yellow-leaved."

A pretty picture, but diffusely elegant.

It is a lover who sees the approach of the "jocund day," but the philosophic Horatio sees the dawning of the morn after his encounter with the elder Hamlet's ghost with more sober feelings:

> "But look, the morn in russet mantle clad
> Walks o'er the dew of yon high eastward hill."

I do not propose to make comparison between the poetry of the Elizabethan days and modern poetry for the sake of disparaging the latter. The debt we all owe to the poets of our own and closely preceding times is measureless in extent, and to be acknowledged gratefully and with tenderness. But in the older English there is an almost epigrammatic terseness, a bold use of epithets, a liberal coinage of new combinations of parts of speech, a daring use of metaphor, which gradually gave place to tamer though perhaps more mellifluous composition.

Here is another instance where one word, and that a Latin one, gives expression to the line, but the whole passage is so remarkably fine that it must be quoted entire. It is from "Christ's Victorie," by Giles Fletcher, 1610, and consists of a personification of Justice.

Mercy has been pleading eloquently for Man before the Eternal Father, when Justice stands forth:

"She was a virgin of austere regard;
Not as the world esteems her, deaf and blind;
But as the eagle, that hath oft compared
Her eye with Heaven's; so, and more brightly shined
Her lamping sight; for she the same could wind
Into the solid heart, and with her ears
The silence of the thought loud speaking hears,
And in one hand a pair of even scales she wears."

The effect of her eloquence is grandly told:

"She ended, and the heavenly hierarchies
Burning in zeal thickly imbranded were;
Like to an army that alarum cries,
And every one shapes his ydreaded spear,
And the Almighty's self, as he would tear
The earth and her firm basis quite asunder,
Flamed all in just revenge and mighty thunder.
Heaven stole itself from earth by clouds that moistened under."

In the first line you will agree with me that the Latin word *austere* is the key-note of expression:

"She was a virgin of austere regard."

The word "lamping"

"So, and more brightly shined
Her lamping sight,"

is almost entirely obsolete. Spenser uses it, and the verb *to lamp*—that is, to shine, to glitter—may be found in archaic dictionaries.

The only modern instance of its use which I have met with is in "Unimore," a poem by Professor Wilson, the "Christopher North" of the palmy days of Blackwood's Magazine. He describes the chief as:

Moody and wild, and with large restless eyes
Coal-black and *lamping*.

There is also in the second stanza a good example of the art with which words were compounded or intensified in the epithet "imbranded." It brings vividly before the imagination the serried ranks of angelic warriors, "hierarchies," as the poet terms them, with brands or flaming swords in their hands, pressing eagerly forward:

"Burning with zeal, thickly imbranded were."

I do not know of another instance of the use of this striking word. It is not to be found in Milton, who borrowed much imagery from this powerful but little-read poem.

The final triumph of Mercy over Justice is finely conceived:

"With that, the mighty thunder dropt away
From God's unwarie arme, now milder growne,
And melted into tears; as if to pray
For pardon, and for pittie, it had knowne,
That should have been for sacred vengeance throwne;
Thereto the armies angelic devow'd
Their former rage, and all to Mercie bow'd;
Their broken weapons at her feet they gladly strow'd."

I cannot refrain from giving you one more quotation from this poem, the less so because a very able critic has declared it to be "the peerless stanza of English sacred poetry." It is from the close of the poem, in which is portrayed the final triumph of the redeemed multitude. You will observe the forcible compounds which prevail:

"No sorrow nowe hangs clowding on their browe,
No bloodless maladie empales their face,
No age drops on their hayrs his silver snowe,
No nakedness their bodies doth embase,
No povertie themselves and theirs disgrace,
No fear of death the joy of life devours,
No unchast sleep their precious time deflowers,
No losse, no grief, no change, wait on their winged hours."

I have spoken of the bold use of new combinations of parts of speech. You will have noticed one of them in the preceding quotation:

"Thereto the armies angelic devowed
Their former rage."

In that very touching play, "A woman killed by kindness," the author of which was Thomas Heywood, a contemporary of Shakespeare, Frankford, who has just discovered the unfaithfulness of his wife, exclaims:

"O God! O God! that it were possible
To undo things done; to call back yesterday!
That Time could turn up his swift sandy glass,
To untell the days, and to redeem the hours!"

The expression "to tell the hours or days" is common enough, but I do not know of any other instance of the use of the word "to

untell," and it adds great force to this outcry of a broken heart. In Shakespeare's Richard II, that luckless king when parting from Queen Isabella, who is about to leave her fallen husband, says:

"Let me unkiss the oath 'twixt thee and me."

One more example of this coinage of verbs must suffice. You doubtless remember that exquisite lyric by Robert Herrick, in which the Robin Redbreast finds Amaryllis sleeping by a fountain, and, believing her to be dead, after his charitable wont, "brought leaves and moss to cover her." She opens her eyes:

"At which poor Robin flew away,
And seeing her not dead, but all *disleaved*,
He chirpt for joy to see himself deceived."

Epithets form a cognate part of this division of striking phrases. It would seem impossible to refer to Diogenes and his tub by any more condensed expression. There is an epigram, the author of which I do not know, but it is in a collection printed in 1640, which, while it has no great merit, is curious in this particular:

UPON DIOGENES AND CRŒSUS.

When the tubb'd cynic went to hell, and there
Found the pale ghost of golden Crœsus bare,
He stops, and jeering 'till he shrugs again,
Says, "O, thou richest king of kings, what gain
Have all thy large heaps brought thee, since I spy
Thee here alone, and poorer now than I?
For all I had I with me bring, but thou
Of all thy wealth hast not one farthing now."

Note the compactness of expression of the last line of another epigram from the same collection:

ON A PROUD MAID.

She that will eat her breakfast in her bed,
And spend the morn in dressing of her head,
And sit at dinner like a maiden-bride,
And talk of nothing all day but of pride,
God in his mercy may do much to save her,
But what a case is he in that must have her!

I think another source of vigor was the boldness with which unusual inflections were made; nouns, for example, being converted into verbs, as in this extract from a sermon by Hugh Latimer, where

prelate and *lord* are so treated. It is from his "Sermon on the ploughers," delivered in 1549. He sternly rebukes the prelates and nobles for "neglecting the plough," or, metaphorically, for not performing their duties.

"Amend, therefore, and ye that be prelates look well to your office, for right prelating is busy laboring, and not lording. Therefore, preach and teach, and let your ploughs be doing."

Further on he breaks forth in this wise:

"And now I would ask a strange question. Who is the most diligent bishop and prelate in all England, that passeth all the rest in doing his office? I can tell, for I know him, who it is. I know him well. But now I think I see you listening and hearkening that I should name him. There is one that passeth all the other, and is the most diligent prelate and preacher in all England. And will ye know who it is? I will tell you. It is the Devil. He is the most diligent preacher of all other; he is never out of his diocese; he is never from his cure; ye shall never find him unoccupied; he is ever in his parish; he keepeth residence at all times; ye shall never find him out of the way; call for him when you will, he is ever at home—the diligentest preacher in all the realm; he is ever at his plough; no lording nor loitering can hinder him."

The impressiveness was often attained by the judicious use of antithesis. There is a fine example of this in the Revenger's Tragedy. Vindici, seeing the King's favorite mistress pass by in state, bursts forth:

"To have her train borne up, and her soul trail i' the dirt!"

Here, too, is a charming little narrative from Fuller, in which antithesis is delicately employed:

"It happened in the reign of this King (Henry II) there was a fierce battle fought in Flintshire, at Coleshall, between the English and Welch, wherein this Henry de Essex, betwixt traitor and coward, cast away both his courage and banner together, occasioning a great overthrow of the English. But he that had the baseness to do had the boldness to deny the doing of so foul a fact until he was challenged in combat by Robert de Momford, a knight, eye-witness thereof, and by him overcome in a duel. Whereupon his large inheritance was confiscated to the King, and he himself partly thrust, partly going, into a convent, hid his head in a cowl, under which, betwixt shame and sanctity, he blushed out the remainder of his life."

There is, perhaps, no passage in the whole range of tragedy in which horrors are so accumulated as in the scene in Webster's play of the Duchess of Malfi, where the Duchess is strangled by order of her brothers in revenge for her having married her steward. Wax figures are shown to her, which she is made to believe are the dead bodies of her husband and children ; a masque of madmen is brought in to affright her ; the tombman comes to her to prepare her grave, and the bellman who is to toll her knell, and the tragic scene closes with this dirge, with its strong antitheses :

"Hark, now everything is still,
The screech owl and the whistler shrill
Call upon our dame aloud,
And bid her quickly don her shroud!
Much you had of land and rent ;
Your length in clay 's now competent ;
A long war disturbed your mind ;
Here your perfect peace is signed.
Of what is 't fools make such vain keeping?
Sin their conception, their birth weeping,
Their life a general mist of error,
Their death a hideous storm of terror.
Strew your hair with powders sweet,
Don clean linen, bathe your feet,
And (the foul fiend more to check)
A crucifix let bless your neck.
'Tis now full tide 'tween night and day :
End your groan, and come away."

Sometimes the vigorous expression is attained by a daring use of the impossible, as in the stirring address of a Roman general to his soldiers, in a play of Beaumont and Fletcher :

"The Gods of Rome fight for ye ; loud Fame calls ye,
Pitched on the topless Appenine."

Or as in this reference to the nightingale with her breast pressed against a thorn, as myths describe her :

"Nor ever lets sweet rest invade her eyes,
But leaning on a thorn her dainty chest,
For fear soft sleep should steal into her breast,
Expresses in her song grief not to be expressed."

Fletcher, Christ's Victorie.

In the Revenger's Tragedy, Vindici, in place of the court beauty expected by his master the Duke, brings in the skull of his dead mistress, and moralizes over it with gravest irony:

"Here's an eye
Able to tempt a great man to serve God;
A pretty hanging lip that has forgot to dissemble;
Methinks this mouth should make a swearer tremble;
A drunkard clasp his teeth and not undo 'em
To suffer wet damnation to run through 'em.
Here's a cheek keeps her color, let the wind go whistle;
Spout, rain, we fear thee not; be hot or cold,
All's one with us."

Note, too, from the same writer the strong imagery in this masterly, if somewhat fantastic, description of the casting-up by the "full-stomached sea" of the body of a shipwrecked knight:

"He lay in his armour as if that had been
His coffin; and the weeping sea, like one
Whose milder temper doth lament the death
Of him whom in his rage he slew, runs up
The shore, embraces him, kisses his cheek,
Goes back again, and forces up the sand
To bury him, and every time it parts
Sheds tears upon him, till at last (as if
It could no longer endure to see the man
Whom it had slain, yet loth to leave him) with
A kind of unresolved unwilling pace,
Winding her waves one in another, like
A man that folds his arms or wrings his hands
For grief, ebbed from the body, and descends
As if it would sink down into the earth,
And hide itself for shame of such a deed."

Sometimes the expressiveness depends upon the curtness due to elision of the auxiliary verb or of intensitives, as in this passage from an old translation of St. Chrysostom:

"Where is he that was clad in raiment of gold? He that rode in the chariot? He that had armies; that had the girdle; that had the heralds? He that was slaying these, and casting those into prison? He that put to death whom he would, and let free whom he was minded? I see nothing but bones, and a worm, and a spider's web; all these things are earth, all these a fable, all a dream, and a shadow, and a bare relation, and a picture, or rather, not so much

as a picture. For the picture we see, at least, is a likeness, but here not so much as a likeness."

There is a vein of thought resembling a part of this passage in a speech of Coriolanus. Cominius addressing him, says:

"Flower of warriors,
How is 't with Titus Lartius?"

The other replies:

"As with a man busied about decrees;
Condemning some to death, and some to exile;
Ransoming him, or pitying, threatening the other."

Occasionally an opportunity is offered for comparison of expressiveness where an old and a more recent author have treated the same subject.

Take, for example, the first verse of Addison's hymn, beginning with:

"The spacious firmanent on high."

The first epithet is faulty; we speak of a spacious house or of spacious streets, but the word applied to the vastness of the heavens seems paltry and unfit. But it is the store of pleonasms in this famous verse which makes it a positive curiosity. "The firmament" is a comprehensive expression; it means the entire celestial sphere; but, not content with this sufficient phrase, see what weak repetitions the poet brings in:

"The spacious firmament on high,
With all the blue ethereal sky,
And spangled heavens, a shining frame,
Their great original proclaim."

There are here four descriptive epithets which are mere pleonasms, namely, the spacious firmament, the blue ethereal sky, the spangled heavens, and lastly, the feeble expression, "a shining frame." The last line contains the objectionable word "original," used in the sense of creator.

It would be unfair to compare Addison with the master poets; but there is a poem upon the same subject as this hymn, written by William Habington, like himself, one of the minor English poets, and published in 1635, which, while not especially strong, exhibits the terseness and clearness in which the other is deficient.

It has no title except a quotation from the psalter: "Nox nocti indicat scientiam:" Night unto night showeth knowledge.

"When I survey the bright
Celestial sphere,
So rich with jewels hung, that night
Doth like an Æthiop bride appear;

My soul her wings doth spread
And heavenward flies,
Th' Almighty's mysteries to read
In the large volume of the skies.

For the bright firmament
Shoots forth no flame
So silent, but is eloquent
In speaking the Creator's name."

There are other verses, but these suffice for the comparison.

In a poem of Sir John Davies, The Orchestra (1596), there is a passage which contains a wonderful personification of the sea in its tidal relation to the moon:

"Soe the sea that fleets about the land,
And like a girdle clips her solid waist,
Musicke and measure both doth understand;
For his great chrystall eye is always cast
Up to the moone, and on her fixed fast;
And as she daunceth in her pallid sphere,
So daunceth he about her center here."

Coleridge has made use of this fine figure in his Ancient Mariner:

"Still as a slave before his lord,
The ocean has no blast;
His great bright eye most silently
Up to the moon is cast—
If he may know which way to go;
For she guides him smooth or grim.
See, brother, see! how graciously
She looketh down on him."

There is no diffuseness or weakness in this fine passage from the modern poet; but, apart from the curious coincidence, I think the figure is more forcibly expressed by the older writer.

From classic days to our own the leveling power of death has been a favorite subject for poetic illustration. The exuberant fancy

of the older writers found expression in the production of image after image, repeated like strokes on an anvil.

In 1598 the plague was so widespread and fatal in London that the courts of law were removed to St. Albans. In a play of that date, by Thomas Nash, there is a lugubrious song, or rather a *Kyrie eleeson*, a verse or two of which will illustrate this apothegmatic style:

"Rich men, trust not in wealth;
Gold cannot buy you health;
Physic himself must fade;
All things to end are made;
The plague full swift goes by;
I am sick, I must die.
Lord have mercy on us!

Beauty is but a flower,
Which wrinkles will devour;
Brightness falls from the air;
Queens have died young and fair;
Dust hath closed Helen's eye;
I am sick, I must die.
Lord have mercy on us!

Strength stoops unto the grave;
Worms feed on Hector brave;
Swords may not fight with fate;
Earth still holds ope her gate.
Come, come, the hells do cry;
I am sick, I must die.
Lord have mercy on us!"

A more poetical treatment of the subject, but with the same method, is to be found in a lyric of Shirley, published in 1659:

"The glories of our blood and state
Are shadows, not substantial things;
There is no armour against fate,
Death lays his icy hand on kings;
Sceptre and crown
Must tumble down,
And in the dust be equal made
With the poor crooked scythe and spade."

Alliteration must not be overlooked as lending its artful aid, though it is a question whether quaintness rather than vigor or impressive-

ness was not the result of its employment. Here is a good example in two pathetic verses of Spenser from his Shepherd's Calendar, under the heading December. They were probably written in remembrance of the destruction of his wife and child at the siege of an Irish fort.

"So now my year draws to his latter term,
My spring is spent, my summer burnt up quite;
My harvest hastes to stir up winter stern,
And bids him claim with rigorous rage his right.
So now he storms with many a sturdy stoure,
So now his blustering blast each coast doth scour

The careful cold hath nipped my rugged rind,
And in my face deep furrows eld hath pight;
My head besprent with hoary frost I find,
And by mine eye the crow his claw doth write.
Delight is laid abed, and pleasure past,
No sun now shines, clouds have all overcast."

It would lead me far beyond the canonical hours, or rather minutes, to pursue these illustrations further. The mine is so rich that the nuggets I have extracted for your critical opinion seem almost insignificant, in view of what might have been exhibited.

I am conscious, too, that while I have endeavored to point out certain subtle arts and methods by which the impressiveness I spoke of has been attained, it is beyond the power of the critic to analyze genius and to account for the great utterances of the poet. I shall trespass upon your patience while I read one more extract, which is in a somewhat different vein from those which have gone before.

John Marston, though his style is somewhat labored and his versification occasionally rugged and sometimes even turgid, has a wonderfully condensed power of expression, lightened up occasionally by a subtle humor.

There is an excellent illustration of the origin of the word "dunces" in the passage I am about to read. Etymologists long since conjectured that the word was originally applied by the Thomists, the followers of Thomas Aquinas, to Duns Scotus, the learned Scotchman, otherwise John Scott of Duns, and his school. *Dunses*, used at first as a distinguishing epithet in acrimonious polemics, came at last to indicate stupidity or ignorance. Marston uses it in its original sense of disciples of Duns Scotus, while describing the research into *An sit anima?* whether there be a soul, and what were its ele-

ments and qualities. The passage seems to have escaped the lexicographers, although it is conclusive of the question:

"I was a scholar: seven useful springs
Did I deflower in quotations
Of crossed opinions 'bout the soul of man.
* * * * * * *
Delight, my spaniel slept, whilst I baused leaves,
Tossed o'er the dunces, pored on the old print
Of titled words; and still my spaniel slept;
Whilst I wasted lamp oil, 'bated my flesh,
Shrunk up my veins; and still my spaniel slept.
And still I held converse with Zabarell,
Aquinas, Scotus, and the musty saw
Of antique Donate; still my spaniel slept.
Still on went I: first, *an sit anima?*
Then an it were mortal. O, hold, hold!
At that they 're at brain-buffets, fell by the ears
A main pell-mell together; still my spaniel slept.
Then whether 'twere corporeal, local, fixt,
Ex traduce, but whether 't had free will
Or no, ho, philosphers
Stood banding factions, all so strongly propt,
I staggered, knew not which was firmer part,
But thought, quoted, read, observed, and pried,
Stuft noting-books; and still my spaniel slept.
At length he waked, and yawned, and, by yon sky,
For aught I know, he knew as much as I!"

Stone Ax in Southeastern Bolivia.—Prof. H. H. Giglioli describes with excellent figures a remarkable stone ax and a stone chisel in actual use amongst the Chawococos of southeastern Bolivia (Internationales Archiv für Ethnograph., v. 2, No. 6, 1889, p. 272.) The material is a green, white-spotted diorite, and the axes are remarkable for the very long handle and small blade.

These axes appear very peculiar to one accustomed to the stone tools of the North American Indians, which are almost without exception hafted as adzes. Professor Giglioli, however, expressly states that stone hatchets in South America are almost universally mounted as axes. In this connection, however, it is interesting to note that Professor Giglioli believes that these long and heavy handled axes are really *weapons*, though they may be occasionally used for industrial purposes.

MENTAL ATTITUDE OF THE CENTRAL AFRICAN.—"The fundamental trait of his character is boundless distrust, which arises from the knowledge of his own unworthiness. Not unjustly, he suspects every black man who comes in contact with him to be a traitor and a liar, and extends this suspicion even to other races, in which he merely judges according to his own experience. He is, as it were, always mentally on the defensive, and thus accepts no one as what he represents himself. Behind each and every one he believes he must suspect something which will deceive, betray, and overreach him. This he must resist, and he believes that he can best accomplish this by never saying what he thinks and what his intention is. He lies under all circumstances, and in this his good memory, as well as his very quick fancy, helps him very greatly." (Paul Reichard, "Die Wanjamnesi," Beitschift d. Gesell. für Erdkunde, Berlin, v. 24, pp. 305, '6.)

MODERN CHRISTIAN GREENLANDERS.—Under the title "Erinnerungen aus Grönland," Free Signe Rink, the wife of the famous Eskimo scholar, Dr. H. Rink, has published in *Deutsche Geographische Blätter* (vol. 12, part 4, 1889, pp. 357–364) two very interesting popular sketches of the life of the modern Christian Greenlanders.

The first of these, "Der Grönlander von der Wiege bis zum Grabe," sketches the bringing up and education of the children, clothing, marriage customs, occupations, and burial. The second, "Der Kayakmann," tells of the early training of the boys in the use of the kayak, and describes the capture of the seal.

WANYAMUESI OF AFRICA.—In the last number of the *Zeitschrif der Gesellschaft für Erdkunde zu Berlin* (vol. 24, part 4) is the first of a series of articles on the Wanyamuesi, by Paul Reichard, who spent many years among them. The present article treats of the divisions of the race, who are true Bantu Negroes, living between Lake Tanganika on the west and the countries of Uhaka and Ugogo; the special peculiarities of their language, the physical characteristics of the race, going very thoroughly into detail, tattooing, marriage, and the birth and bringing up of children.

BOWLDER OUTLINE FIGURES IN THE DAKOTAS, SURVEYED IN THE SUMMER OF 1890.

BY T. H. LEWIS.

The AMERICAN ANTHROPOLOGIST for April, 1889, and July, 1890, contains articles describing certain "Stone Monuments" in southern Dakota, northwestern Iowa, and southwestern Minnesota. The present paper refers to the same class of works, which are now termed *bowlder outline figures*, because the words "stone monuments" are apt to convey to most minds the idea of solid work and vertical extension, rather than that of a simple placing of one layer of bowlders or large pebbles on the surface of the ground. In the months of July and August last I noted many fine specimens of works of this kind in the Dakotas, lying to the west of those previously described, but yet east of the Missouri river, and here furnish a concise account of such of them as I made measurements of.

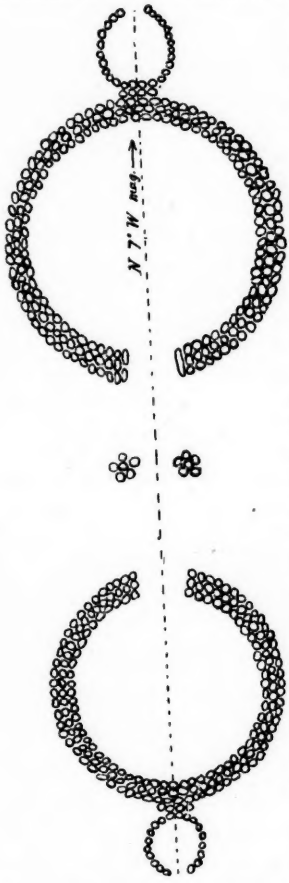

FIG. 1.—Circular inclosures of bowlders. Scale, $\frac{1}{1200}$.

In Stutsman County, N. D.—On the bluffs bordering the valley of James river, in the southeastern part of the county, bowlder outlines are very numerous, especially on the west side of the river. This region is particularly interesting, for, in addition to the ordinary circles, several new forms or elaborations of that simple figure were met with.

On the N. W. ¼ of section 13, township 138, range 63, on the west side of the river, there are two circles (Fig. 1), the centers of which are 27½ feet apart. Each circular

area is surrounded by three rows of bowlders laid close together, after the fashion of bowlder pavements. In each one there are openings, which are three feet in width and are exactly opposite each other. Nearly half-way between the two openings there are two small clusters of bowlders which are two feet apart, and each one is about two feet in diameter.

The northern circle is 16 feet in diameter, from center to center of the pavement, and opposite to the opening, on the northern side, there is a circular attachment which is four feet in diameter, inside measurement, with a small opening, one foot wide, facing the north. This attachment is formed by a single row of bowlders, and is connected with the pavement by a row of four other bowlders.

The southern circle is similar in form and mode of construction, but it is only thirteen feet in diameter, and the attachment is but three feet wide, with an opening of one foot.

In the same group there is a circle (Fig. 2) seventeen feet in diameter, with an opening on the northern side which is two and a half feet in width. On the opposite side from the opening, but on the outside of the circle, there is an attachment consisting of twelve bowlders, laid in three rows of five, four, and three bowlders each respectively. On each side, half-way to the opening, there are two other attachments, consisting of three rows of four bowlders each, laid close together.

FIG. 2.—Scale, $\frac{1}{120}$.

About one-fourth of a mile distant, on the southwest quarter of the same section, there are two other interesting circles. One of them is divided into two equal parts, and the other into four equal

parts. Such divided circles exist at several other points along the valley. Some of them have small openings, while in others there are none whatever.

On the northwest quarter of section 31, township 138, range 62, on the east side of the river and about four miles below the preceding locality, there are two parallelograms which have rounded ends, but are without openings. They are about three hundred feet apart, on a magnetic bearing of S. 32½° W., which would also nearly coincide with their axes, but that seems to come mostly from the contour of the ground they lie on. The northern parallelogram is 57½ feet in length and 6 feet wide, inside measurement. The southern one is 75 feet in length and 4½ feet wide inside. Attached to the northern end of the latter there is a semi-circle of bowlders extending outward like a pair of horns, the points of which are 4½ feet apart; also, about 100 feet to the northwest of this southern parallelogram, is found one of the circles already described as divided into four parts, like a wheel with four spokes only.

In Jerauld County, S. D.—About four miles north and a little west of Wessington Springs there is a high knob, which is locally known as "Turtle Peak." It is located on the N. W. ¼ of section 35, township 108, range 65, and is on the eastern border of the said hills, a low range running nearly north and south. Its top is elevated some 450 feet above Firesteel creek, which is a branch of James river. East of the creek there is a dividing ridge, which rises, perhaps 150 feet above the river, and separates the two valleys. From the top of the peak a grand view may be had of the adjacent country to the north, south, and east; and on a clear day several towns and villages are within view, including Huron, which is located more than 25 miles to the northeast, in an air line.

On the highest point of the peak there is an ancient mound 45 feet in diameter, which averages 3 feet in height. On the top of the mound there was an intrusive grave, covered over with bowlders, which has been excavated. On the southwest side of the mound, and partially overlapping its base, are two noteworthy bowlder outlines, one representing a woman and the other a tortoise or other quadruped (Fig. 3).

The woman is rather rude in outline, and some of the bowlders have been removed. The length of the figure, in an air line, is about 15 feet, and there are 111 bowlders still remaining in place. Near

the woman is the other figure, representing, apparently, a tortoise. Its length, in an air line, from the end of the tail to terminus of the head, is 18¾ feet, or along the centre 20¾ feet. Some of the bowl-

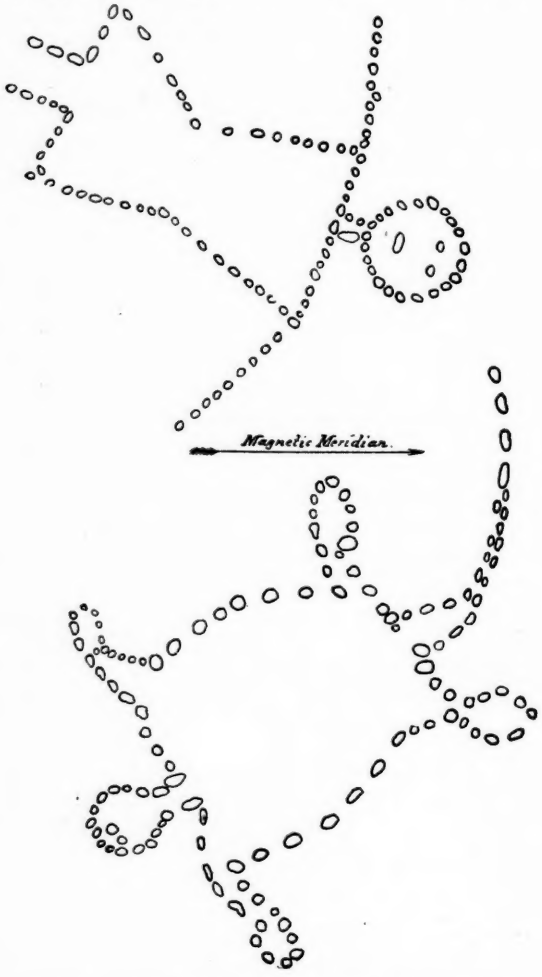

FIG. 3.—Bowler outlines of woman and quadruped. Scale, $\frac{1}{60}$.

ders have evidently been removed, but there are 125 still remaining in place.

The stones and bowlders forming these two figures are of various sizes and shapes, the largest being some six inches in diameter. The bowlders forming the tortoise are imbedded somewhat deeper than those of the other figure, but this fact would hardly imply that it was the oldest; for, its position being somewhat lower down than that of the other figure, it is quite evident that there would be a greater accumulation of soil on its site in a given period than on that of the woman.

It has been asserted by some persons residing in the vicinity, and still seems to be the impression of some of them, that these figures were constructed in very recent years; but this theory is evidently erroneous, for their existence has been known since the country was first settled—at least, such is the statement of the oldest citizens, and I see no reason for doubting them.*

To the south and southwest there are several stone heaps, large and small, which probably mark graves. A short distance to the southwest of the mound there is a circular bowlder pavement, which is fourteen feet in diameter, and slopes slightly in all directions from its center. The bowlders forming it are nearly equal in size, and the surface is as nearly even as it is possible to lay them.

On a knob about two miles south and east from the Turtle Peak, on the N. W. ¼ of section 12, township 107, range 65, there is an

* It is but fair to state here that in a paper by Prof. J. E. Todd, which appeared in the American Naturalist for January, 1886, this tortoise was described and a plan of it given; also on the same plate its position shown, relative to that of the woman, in a very small diagram. The latter figure, however, he did not enlarge upon, dismissing it summarily as "confessedly the work of an early owner of the ground." In the same article he also gives a plan and description of the "snake" surveyed by me in Hughes county, S. D., and published, with other outlines, in THE AMERICAN ANTHROPOLOGIST for April, 1889. Although he only roughly measured it, he says, the length as given by him agrees exactly with that my more elaborate survey afforded, and a comparison of the two entirely independent diagrams of this stone snake will be found to reveal no material difference in shape or size. This fact may somewhat reassure a certain writer who, *apropos* of Dr. Thomas' pamphlet on the *Problems of the Ohio Mounds*, recently expressed himself as follows: "'Accurate surveys,' by the way, are rather amusing concoctions. We have seen a compilation of 'accurate surveys' of the Great Serpent Mound, the largest of which was nearly double the smallest, while two, made the same week, varied about two hundred feet."

odd form of bowlder-work, but in a general way it is similar to some found on the west side of the James river, in North Dakota. A circular area 17½ feet in diameter, inside measurement, is surrounded by a pavement, which has no opening. On the northern side there is an attachment extending outward, as shown in the diagram (Fig. 4).

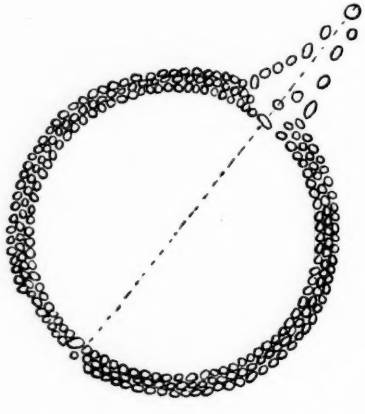

FIG. 4.—Scale, $\frac{1}{120}$. Dotted line runs N. 230 E. mag.

On the hills adjacent to the two localities described above, and also on the lower plateaus bordering the bottom lands, there are many circles, small stone heaps, and other figures.

From the best sources of information accessible it is evident that the bowlder outlines are very numerous in the Ree and Wessington Hills, and also in the intermediate country.

The bowlders in most of the figures described in this paper are very numerous, and were therefore not counted. Wherever bowlders were counted their number is given.

PHYSICAL CHARACTERISTICS OF THE INDIANS OF THE NORTH PACIFIC COAST.

BY FRANZ BOAS.

During the past summer, when visiting the North Pacific coast, I made a series of measurements of 263 Indians. The tribes included in this series occupy the coasts of Oregon, Washington, and British Columbia, and belong to many linguistic stocks. As the series is not sufficiently large to allow a separate treatment of the individuals of each tribe, I have grouped them together according to their former habitat and, to some extent, according to their mode of life, the tribes living on reservations being separated from those passing much of their time in the canoe. I have distinguished the following groups:

1. Southern Oregon, including principally tribes of Athapaskan affinity, but also a few Klamath, Shasta, etc. The northern limit of this group is situated at Euchre creek.
2. Central Oregon, including the tribes between Euchre creek and Umpqua river.
3. Northern Oregon, including the Yakonan and Salish tribes between Umpqua and Columbia rivers.
4. Columbians, including the tribes in the immediate neighborhood of Columbia river and in the lower Willamette valley.
5. Tribes of Washington, including the whole coast of Washington west of the Cascade Range.
6. Harrison Lake and Lillooet.
7. Vancouver Island.
8. The Bilqula, on the central part of the coast of British Columbia.
9. Tribes of British Columbia north of the last-named group.

Only a short series of measurements of each individual was taken, such as could be made by the removal of only a small portion of the clothing. Following is a list of the measurements:

1. Stature.
2. Finger-reach.
3. Height of ear.
4. Height of 7th vertebra.
5. Height of acromion.
6. Height of point of second finger.
7. Width between acromia.
8. Height when sitting.
9. Length of head.
10. Width of head.
11. Jugal width of face.
12. Distance from root of nose to chin.
13. Distance from root of nose to mouth.
14. Height of nose.
15. Width of nose.

In discussing the series, I have excluded all males of less than 20 and more than 50 years of age, and all females of less than 19 and more than 50 years of age, the former because they have not reached the adult stage; the latter on account of the incipient changes incident to old age. It may seem that the lower limits are fixed too low, but, as the growth after 19, viz., 20 years, is very slight, the gain in accuracy resulting from the average of a greater number of individuals far outweighs the slight error that is introduced by the immaturity of a certain number of them.

On examining the series, it appears that there are very marked differences between the various local groups. In order to make these differences apparent, a table of those measurements which vary most among the different groups is here presented. In addition to the average, the table contains the limits between which one-half of the series is found—*i. e.*, the probable variation. The last three figures in each column are the finger-reach, height when sitting, and length of arm, expressed in permills of the stature.

I. MALES.

	Southern Oregon.	Central Oregon.	Northern Oregon.	Columbians.	Washington.	Harrison Lake.	Vancouver Island.	Bilqula.	Northern tribes.
Number of observations	17	9	7	8	6	9	7	23	7
Stature	1623 ± 24	1653 ± 45	1651 ± 33	1699 ± 53	1647 ± 45	1611 ± 37	1635 ± 42	1659 ± 44	1631 ± 18
Finger-reach	1693 ± 26	1719 ± 40	1734 ± 36	1792 ± 50	1721 ± 43	1696 ± 47	1758 ± 54	1771 ± 26	1710 ± 18
Height when sitting	877 ± 13	914 ± 27	913 ± 18	922 ± 26	899 ± 6	860 ± 24	881 ± 12	890 ± 21	888 ± 13
Length of arm	724 ± 16	730 ± 21	729 ± 18	758 ± 24	721 ± 7	723 ± 27	751 ± 22	754 ± 17	737 ± 9
Cephalic index	83.2 ± 3.1	82.8 ± 1.8	.....	(82.2 ± 1.4)*	(83.9 ± 1.8)†	89.7 ± 2.1	79.8‡	84.1 ± 2.4	79.5 ± 2.4
Facial index	85.3 ± 3.0	85.4 ± 4.1	80.3 ± 1.4	82.1 ± 2.3	82.7 ± 2.2	76.0 ± 2.6	83.8 ± 3.9	83.8 ± 2.8	82.8 ± 1.8
Index of width of upper part of face	53.2 ± 2.5	53.4 ± 2.9	50.5 ± 1.8	53.1 ± 1.3	53.5 ± 2.6	49.2 ± 2.9	53.8 ± 3.2	53.4 ± 0.9	53.5 ± 5.1
Index of finger-reach	1043 ± 11	1040 ± 15	1050 ± 16	1055 ± 10	1056 ± 10	1053 ± 8	1071 ± 25	1069 ± 18	1050 ± 6
Index of height when sitting	540 ± 6	553 ± 8	553 ± 4	543 ± 7	547 ± 12	534 ± 4	539 ± 8	537 ± 7	548 ± 8
Index of length of arm	446 ± 4	443 ± 10	441 ± 7	446 ± 6	438 ± 6	450 ± 12	459 ± 8	455 ± 8	452 ± 4

II. FEMALES.

Number of observations	3	6	2		4	9		6	
Stature	1531 ± 28	1567 ± 38	1546	.....	1552 ± 29	1522 ± 24	.....	1568 ± 19	
Finger-reach	1555 ± 30	1613 ± 48	1606	.....	1602 ± 20	1568 ± 50	.....	1655 ± 45	
Height when sitting	855	858 ± 13	832	.....	876 ± 22	808 ± 20	.....	850 ± 23	
Length of arm	663 ± 30	691 ± 18	687	.....	681 ± 25	681 ± 22	.....	718 ± 19	
Cephalic index	82.7 ± 3.7	82.2 ± 1.1	.....	.....	.....	87.9 ± 3.8	.....	.....	
Facial index	83.9 ± 2.4	82.9 ± 2.0	82.4	.....	78.2 ± 2.4	78.9 ± 3.0	.....	83.1 ± 3.2	
Index of width of upper part of face	52.5	51.9 ± 1.9	55.5	.....	50.7 ± 1.2	50.8 ± 3.5	.....	53.0 ± 2.8	
Index of finger-reach	1016 ± 23	1029 ± 12	1038	.....	1032 ± 9	1045 ± 12	.....	1059 ± 12	
Index of height when sitting	560 ± 11	548 ± 8	539	.....	564 ± 12	531 ± 7	.....	544 ± 5	
Index of length of arm	433 ± 21	441 ± 6	444	.....	439 ± 15	449 ± 3	.....	459 ± 8	

*9 boys and men. †12 boys. ‡3 observations.

Considering the series as a whole, we may describe the population of the North Pacific coast as of average size, ranging, when considered in groups, from 1,611 to 1,699 mm., with short heads and rather wide faces and large chins. Their skin is of light color, and, if protected from sunlight, can hardly be distinguished from that of European brunettes. The hair is of a very dark brown, straight or slightly wavy. The eye almost always has a well-developed plica interna; the eyebrows are wide; the ears coarse, with small lobes.

A study of the distribution of the single observations in each group of the series shows that the groups may be considered as homogeneous, so that we are justified in forming the averages given in the above table.

Although the series are rather small, a number of conclusions may safely be drawn from them. Wherever the series of males and females shows analogous variations these can hardly be due to accident, but it is fair to assume that similar figures would result from a larger series.

Considering the observation on stature, we are struck by the tallness of the Columbians and the small size of the tribes of Harrison lake. A comparison of the series of males and females proves that these averages are trustworthy. When we express the stature of the women in per cents. of that of the men, we obtain the following results:

Southern Oregon.	Central Oregon.	Northern Oregon.	Washington.	Harrison Lake.	Bilqula.
94.3	94.8	93.6	94.2	94.5	94.5

These figures agree very well with each other, and with those expressing the same relation among other races.

It appears that the stature increases as we approach Columbia river from the north and from the south. It is of interest to note that the greater size of the natives of this region has been remarked upon by a number of writers.* We find in this region Sahaptin tribes, who descended from the interior to the coast; the Molalla, part of whom live far inland, and the Chinook, whose territory extends far up Columbia river, so that an intrusion of a taller race coming from the east and settling here becomes very likely. The proportions of the body and of the head of the Columbians present no very marked divergence from those of the neighboring tribes.

* Bancroft, Native Races, Vol. I, p. 254.

They are in the habit of deforming their heads; consequently no conclusions can be drawn from head measurements. The faces of the Columbians are a little wider than those of their neighbors on both sides.

The tribes of Harrison lake, who are remarkable for their short stature, differ fundamentally from all others. The great majority of individuals belonging to these tribes may easily be recognized by their peculiarities. Their heads, although not deformed, are exceedingly wide; their faces very chamæprosopic. These peculiarities may be observed in males as well as in females.

In Vancouver Island is found a group of tribes which resemble closely those of the northern part of the coast of British Columbia. They are characterized by a size ranging between that of the tribes of northern and those of southern Oregon, and by a much longer head than is found anywhere farther south. The index of the three individuals of Vancouver Island is 79.9; that of the seven individuals belonging to northern tribes, 79.5. This interesting fact is confirmed by measurements of skulls from these regions. I published in the Verh. der Berliner Ges. f. Ethnol., 1890, p. 30, measurements of a series of 10 undeformed crania from the southeastern part of Vancouver Island. These give an average index of 77.7. To this may be added a skull described by Flower* belonging to the west coast of Vancouver Island, which has an index of 77.4. If we allow, according to Broca, 2 per cent. difference between the cranium and the head of living individuals, we find that the results of these series agree very closely. We have also a series of measurements belonging to the northern part of the coast of British Columbia. Four Tsimshian skulls have been described by me.† Three others have been described by Barnard Davis. Still another has been described by the same author as a "round head" from Vancouver Island (p. 229). Finally, I measured a Haida cranium in the Provincial Museum of Victoria, B. C. The average of these 9 skulls gives 78.4. It will be seen that all these values agree very closely, and confirm the results obtained on the living individuals.

It is very remarkable that we find located between these two homogeneous groups a somewhat taller and much more brachycephalic

* W. H. Flower, Catalogue of the Specimens illustrating the Osteology, etc., in the Museum of the Royal College of Surgeons, p. 148.

† Report to the B. A. A. S. on the tribes of British Columbia, 1889, p. 16.

people—the Bilqula. Fortunately the series of measurements on this tribe is sufficiently large to give the result a high degree of probability. North of British Columbia we find the Tlingit, also considerably taller than the tribes of northern British Columbia, and much more short-headed. Unfortunately no satisfactory series of measurements of this people is accessible to me. As there is a constant intercourse between the various tribes of this region, and as the conditions of life of all of them are uniform, we must assume that these differences are racial characters. Our knowledge of the native tribes of the interior of British Columbia is very limited, but we may adduce some material from the most southern part of this region. Seven skulls from Lytton, B. C., which are in the Museum of the Geological and Natural History Survey of Canada, in Ottawa; one from the same place, which is in my possession, and two Shushwap skulls described by Barnard Davis, give an average cephalic index of 78.9. A single Shushwap whom I measured in New Westminster has a cephalic index of 82.9, corresponding to about 80.9 on the skull.

On account of the remarkable differences in the cephalic indices of these various groups of tribes, it would be of great interest to know the natural form of head of the tribes of northern Vancouver Island, of the delta of Fraser river, of Puget Sound, and of northern Oregon. Unfortunately all of them deform their heads. On Fraser river, on Puget Sound, and north of Columbia river this custom is, however, dying out, and I was able to measure a series of children. Twelve boys from Puget Sound give an average of 83.9, with a probable variation of 1.8; thirteen from Fraser river give an average of 87.3, with a probable variation of 2.0. Although the results obtained by measuring boys are not identical with those obtained by measuring adults, the difference is probably not very great. At least the results of the measurement of the cephalic indices of 13 boys from southern Oregon are almost identical with the results obtained from the measurement of 17 adults. According to these figures, the Indians of Puget Sound would have to be grouped in close connection with those of central Oregon; those of Fraser river with the tribes of Harrison lake. The Bilqula resemble the tribes of Puget Sound and of northern and central Oregon.

It appears, therefore, that there is a comparatively uniform, mesocephalic population on Vancouver Island and on the coast of British Columbia, with the exception of Fraser river and Bentinck Arm.

The latter are at the same time the regions where intermarriage with the Athapaskan tribes of the interior has been frequent. We know that the Bilqula have intermarried very extensively with the Carriers and Chilcotin; the Lillooet with the latter. Therefore it would appear that brachycephalism becomes more frequent in those regions where intermixture with Athapaskans makes itself felt. In order to strengthen or to refute this theory, it would be necessary to obtain measurements of the Sishiatl, of Jervis Inlet, and of the upper Tsimshian, both of whom are in close contact with Athapaskans. The Tlingit, of Alaska, who are immediate neighbors of Athapaskan tribes, are also more brachycephalic than the tribes of the coast of British Columbia, and their stature seems to be higher. There can be little doubt that among the Athapaskans on the whole brachycephalism is very frequent. Quatrefages and Hamy* mention seven skulls from various Athapaskan tribes of Canada, and find them to be brachycephalic. The proportions of their faces, also, closely resemble those of the Bilqula and the other tribes discussed in the present paper. I had occasion to question a number of former officers of the Hudson Bay Company regarding the general appearance of the Athapaskans of the interior of British Columbia and of the Mackenzie Basin. According to their descriptions, the Athapaskans resemble the tribes of the northwest coast much more closely than the Algonquin. For these reasons, as well as on account of the form of their language and a number of customs and beliefs, I am inclined to class the Athapaskans as one of the peoples of the north Pacific coast. A good series of measurements from the Mackenzie Basin would decide this question. The almost complete absence of Dolichocephali—at least, according to the present state of our knowledge—distinguishes them most clearly from the eastern group—the Algonquin and Iroquois—as well as from the central and eastern Eskimo.

The divergence of the tribes of Harrison lake from all their neighbors is very curious, more especially the high degree of brachycephalism and of chamæprosopy. The width of both head and face is much greater than is found in any other tribe. Their small stature is also quite unique. If I should include three men of about 55 years in the series, the average would be less than 1,600 mm. I may mention here that three tibiæ and femora which I collected at Lytton with the mesocephalic skulls mentioned above are very small.

* Crania ethnica, p. 470.

Assuming the tibia to be about 22 per cent., the femur 27 per cent. of the stature, the three individuals would have measured about 1,430, 1,500, and 1,560 mm., thus corresponding in size to the females of the Harrison lake series. This, however, is, of course, a very unsatisfactory comparison.

We will finally consider the proportions of the bodies of the various groups. It appears that the finger-reach of the southern tribes, especially of those of southern and central Oregon, is much smaller than that of the northern tribes. I am inclined to attribute this to a difference in occupation, the two first-named groups living on reservations, while the others are fishermen. Hand in hand with this lengthening of the finger-reach seems to go an increase in the length of the arm. These variations may be seen in males as well as in females. The latter also pass much of their time in the canoe. The table shows that the trunk of these Indians is much longer than that of Europeans, and also longer than that of the Iroquois, which, according to Gould, is 53.4 per cent. It seems that the trunk of the southern groups is longer than that of the northern ones.

It is of the greatest interest to observe that upon studying the physical characters of the tribes of the Pacific coast in detail such a variety of forms is found. Each tribe appears composed of many types, but in each we find a marked prevalence of a certain type. Unfortunately we have hardly any detailed studies on the physical characters of living Indians, and yet these studies are just as important as those on languages, customs, and beliefs. The disappearance of tribes, their intermixture with each other, and with whites, the changes in their mode of life, are so rapid that little time remains for studies of this character.

Banana Cultivation among the Natives of New Guinea.—Sir William Macgregor, governor of British New Guinea, in his recent exploration of the Fly river, found that the natives of the large island of Kawai, in the delta of that river, gave much attention to the cultivation of the banana. In a vocabulary of their language which he compiled there is a list of not fewer than thirty-six varieties of banana, and from personal experience he testifies that the distinctions were not fanciful, but indicate real, substantial differences. This is among a people whose sole utensil, used as bucket, basin, bowl, and plate, is a large slipper shell. (Proc. Roy. Geog. Soc., June, 1890, p. 354.)

THE INTERNATIONAL CONGRESS OF AMERICANISTS.

BY D. G. BRINTON, M. D.

As probably the majority of the readers of the ANTHROPOLOGIST are aware, the *Congrès international des Américanistes* is of French origin, its first session having been held at Nancy in 1875. Since that date it has convened once every two years, except in one instance, when the cholera led to its postponement for one year. This explains why its sessions at present take place in years with even numbers instead of with odd.

As it is international in constitution, it has at different times assembled in Italy, Germany, Denmark, Belgium, France, and Spain. For the same reason its deliberations are conducted either in English, French, Spanish, German, or Italian, though French is the language generally adopted.

The session of 1888, in Berlin, was very successful, the amount of excellent scientific matter presented large, and the social features attractive. The volume of transactions, or *Compte Rendu*, which has since appeared of that session, contains 806 pages of material well worth the attention of students of the field to which the Congress devotes itself.

This field embraces several distinct sections. One is occupied with the pre-Columbian discovery of America; another with the history of its exploration and colonization; a third with the archæology of the continent, both quaternary and recent; a fourth with the ethnography and anthropology of the native tribes, and a fifth with their linguistics and mythology. The later history of America is not a part of the scheme of study.

So much for a general description of the body which assembled in Paris, at the rooms of the Society of Geography, Boulevard St. Germain, on the 18th day of October last. There were in all from eighty to a hundred members present; among them many well known as writers, travellers, and scholars. From Germany there were Professor Virchow, Dr. Hellmann, Dr. Paul Ehrenreich, Dr. Ed. Seler, Dr. Otto Stoll; from Italy, Professor Cora, of Turin, Borsari, of Naples, Grossi, of Genoa; from Spain, Señor Jimeñez de la Espada,

the Duke of Veragua, Senator Fabié; from Costa Rica, Señor Manuel de Peralta, well known for his valuable publications of ancient documents; from Mexico, Dr. Altamirano, consul-general of his country in Paris, and a full-blood Aztec, Dr. Antonio Peñafiel; from Sweden, Dr. Martin, and many others whose names are familiar to readers on American ancient history.* Of course the French contingent was the largest. I need only mention the president of the Congress, Professor de Quatrefages; the patron, Dom Pedro, ex-Emperor of Brazil, now a resident of Versailles; Prince Roland Bonaparte; the Marquis of Bassano, once ambassador of France to the United States; the Marquis of Nadaillac, the author of an excellent treatise on the archæology of America; the Count de Charencey, distinguished in American linguistics; the Baron de Baye, the Count de Marsy, the Marquis de Croizier, Judge Lucien Adam, M. de la Grasserie, Dr. Collignon, Alphonse Pinart, the Abbé Petitot, Professor Gaffarel, and many others. Especially should be mentioned the general secretary, M. Désiré Pector, consul of Nicaragua, whose devotion to his duties and uniform courtesy and kindliness were always conspicuous.

Scientific sessions, with reading of papers and discussions, were held on the 18th, 19th, 20th, and 21st. They were relieved by visits to the museums containing objects of interest to Americanists, and by receptions and other occasions for social intercourse.

This social feature, as might have been expected from the well-known hospitality of the French, was a prominent and delightful trait. On this occasion unusual, in fact unprecedented, honors were shown the Congress. For the first time in the history of scientific bodies assembling in Paris, the Congress was tendered official receptions both by the Municipal Council of Paris and by the President of the Republic, M. Carnot. The former was given in the magnificent apartments of the new Hotel de Ville, and the latter in the charming interior of the Palais de l'Elysée. President Carnot received personally, and each of the vice-presidents (among whom I had the honor of being counted) was presented to him in turn and enjoyed a short conversation with him. On either side of me stood Prince Bonaparte and the Marquis de Nadaillac, and it was a pleasant illustration of the harmonizing influence of science that these two distinguished members of parties not in sympathy with the present government of France found themselves for the first time in personal relations with the President of the Republic.

A sumptuous reception was also tendered the Congress by Prince

Bonaparte in his stately hotel on the Cours la Reine, and at the close of the week an official banquet took place in the Hotel des Sociétés Savantes. I need not include in this list the graceful private hospitality extended by M. De Quatrefages, the Marquis de Nadaillac, and others, which added to the pleasant reminiscences which many members bore away with them.

Along with all this, the scientific work was not neglected. During the first session an interesting discussion as to the origin of the name *America* was held. Some have thought that this word was brought back by Columbus on his last voyage, and is a form of the name of the *Amerisques*, a tribe near the coast of Vera Paz, or from the *Amarisonas*, a tribe near the shores of Venezuela. The matter received full attention, and the decision was reached quite positively that the usual account, that it was from the name of Amerigo Vespucci, is correct.

Some new particulars by Señor de Peralta were brought forward concerning the expedition of Balboa, and the date of his death was more accurately fixed as on January 15, 1519, instead of 1516, as is commonly taught.

In a discussion relating to the publication of the marginal notes in some of the books from the library of Columbus, now preserved in Seville, it was positively stated that these notes were not by the great navigator, but in another handwriting.

The voyages of Cortereal to the coast of Newfoundland were ably treated from original documents by M. Gaffarel.

During the second session M. Beauvois presented the arguments relating to the voyages of the Norsemen to the north Atlantic coast of America, and speculated on the influence they may have exerted on the native civilization. M. Charnay pointed out some analogies between the prayers of the ancient Aztecs to Quetzalcoatl and those of the Chinese to some of the Buddhistic divinities. He was inclined to think the resemblance was more than a coincidence.

At other sessions the Abbé Petitot gave a summary of Athapascan mythology as compared with that of the Old World. The Marquis de Nadaillac presented an admirable synopsis of recent discoveries concerning the most ancient remains of man in America. Mr. Henry Phillips, Jr., of Philadelphia, exhibited and described photographs of the Codex Poinsett, an Aztec manuscript of the fifteenth century, preserved in the library of the American Philosophical Society. M. Boban, the widely known antiquary, submitted for examination pho-

tographs of a number of Aztec Codices from the celebrated collection of M. Aubin, now in the possession of M. Goupil. Mrs. Nuttall sent an extremely well-prepared paper on a piece of ancient Mexican feather-work with a curious history.

Dr. Ed. Seler delivered an attractive address, illustrated by numerous colored drawings, of the ruins of Mitla, the material obtained during a recent personal visit. A number of specimens of the native airs of Guatemala were rendered on the piano by M. Bouret, formerly on the French legation in that country. They were nearly all in the major key of the scale, and on that account much doubt was thr own upon their authenticity. Probably they were of Spanish origin.

M. Dr. Hamy, director of the American Museum of the Trocadero, not only offered some valuable communications, but received the Congress at the museum, and displayed to its members the many remarkable and admirably arranged treasures in American archæology which he there has under his charge.

In the departments of ethnography and linguistics M. Lucien Adam presented three communications—one on the morphology of the pronouns in the Mosquito language; a second on the Rocouyenne and Boni-ouayana dialects of Guiana, showing them to be of the Carib stock reduced to the condition of a jargon, and a third on the Oyampi dialect spoken on the upper Oyapok river, which he shows to belong to the Tupi stock. M. A. Pinart had a paper on the dialects near the Isthmus of Panama; Dr. D. G. Brinton, of Philadelphia, one on the various tongues in Mexico and Guatemala, included under the terms Chontalli and Popoloca, and M. de la Grasserie one upon the grammar of a South American tongue.

There was besides these quite a long list of communications assigned for the *séance libre*, at which, unfortunately, I could not be present, as I was obliged to sail for New York a day before the Congress closed.

There were a number of books and objects of archæology exhibited and presented to the Congress. Among the donations was conspicuous a handsomely bound set of the AMERICAN ANTHROPOLOGIST.

The officers of the Society elected at this session were as follows:

President.—M. de Quatrefages.

Vice-Presidents.—M. Dr. Ign. Altamirano, Mexico; M. le Prince R. Bonaparte, France; M. Dr. D. G. Brinton, United States; M. Prof. G. Cora, Italy; M. Fabre, Canada; M. Dr. E.-T. Hamy,

France; M. Dr. G. Hellmann, Germany; M. le Marquis de Nadaillac, France; M. le duc de Veragua, Spain.

Members of Council.—M. L. Adam, France; M. E.-S. Dahlgren, Sweden; M. Dr. E. Morado, Cuba; M. Dr. D'Ornellas, Peru; M. M.-M. Peralta, Costa Rica; M. Phillips, United States; M. le Baron De Rio Branco, Brazil; M. V. Schmidt, Denmark; M. Dr. Serrurier, Holland; M. le chevalier J. Da Silva Amado, Portugal; M. Dr. O. Stoll, Switzerland; M. Dr. Triana, Colombia.

Secretary General.—M. D. Pector.

Secretaries.—M. Deniker, France; M. Prof. V. Grossi, Italy; M. Dr. E. Seler, Germany; M. Dr. Verneau, France.

It will be seen from this list how thoroughly international is the Congress.

The next place of meeting was the theme of a lively discussion. Invitations were received from Philadelphia, Buenos Ayres, Genoa, and Spain. The last mentioned was accepted; the city not defined, but probably it will be either Seville or Huelvas.

In this brief sketch I have omitted to mention a number of the communications presented, but the omission is of minor importance, as in less than six months it is expected that the complete Compte Rendu of the Congress will be published by the widely known house of E. Leroux & Co., Paris.

THE FUEGIANS.—"Jahgan. This is the name given to a tribe of Fuegians whom we know from the expedition and reports of Captain Bove, and who frequent with their canoes a roadstead south of Beagle channel. They go naked, except a little skin on the haunches, and anoint their bodies with whale oil mixed with red ochre. Thus they say they protect themselves from cold. They live on the products of the hunt and fishing, which they carry on by means of several kinds of darts. Their dwellings are little huts, but they cannot be called settled. A man usually has two wives, one older and the other younger. They are of good disposition and obliging, but lay much stress on their own customs and laws. The women are more intelligent and industrious, the men more talkative and shrewd. They have no true religion, but certain ideas of spirits and certain rites in which the men alone share." (Bollettino della Società Geografica Italiana, Sept., 1889, ser. 3, v. 2 : 9, p. 785.)

FOOD OF THE NATIVES ON THE CONGO.—M. Le Clément de St. Marcq writes from Basoko to "Le Mouvement Géographique" (May 25, 1890) as follows:

"The staple food of the natives of this region (between Stanley Falls and Kassongo) is the plantain, which they eat boiled or roasted. With fish, it is almost their sole nourishment. At Wamongo they have only fish, but obtain bananas from the caravans. They exact them in payment for the trans-shipment of the canoes. Elsewhere, near Riba-Riba, they exchange their fish for Indian corn, which comes in great quantities from Kasuku, where, on the other hand, the banana is not found. At Riba-Riba manioc is cultivated on a large scale. . . . The sweet potato is found in abundance at Kibongo. . . . The peanut is extremely rare everywhere and is only found at the large Arab stations. Rice is found only at the Arab centers and only the rich Arabs eat it. Chickens and goats are hardly ever seen among the natives; the Arabs and their followers alone raise them. At Kibongo and Riba-Riba are found the pine-apple, the papaw, the mango, the citron, and the sweet lemon, erroneously called the orange."

MYTHOLOGIC TALES FROM THE INDIANS OF THE NORTHWEST COAST.—J. A. Jacobsen has just published a second installment of the mythological tales of the northwestern Indians ("Das Ausland," vol. 63, No. 22—"Nordwestamerikanische Sagen").

The stories are nine in number, as follows:

"How the Indians learned the mask dances."

"How the Haidas learned to make totem-posts."

"How the god Kwannemkiloko changed his enemy into a deer."

"The mouth-distorting spirit."

"The thunder god Seiux."

"The origin of the human race."

"The deluge of the Aht Indians."

"How the Indians on the east coast of Vancouver's Island got fire."

"How the Indians learned whale-fishing."

THE MAPLE AMONGST THE ALGONKIAN TRIBES.

BY A. F. CHAMBERLAIN.

The valuable paper of Mr. Henshaw (Vol. III, 341–351) has shed new light upon a very interesting question. Besides the data contained in it, there exist some other notices which inferentially prove the Indian origin of maple sugar. In the memoir of Father Rasle, printed in the collections of the Massachusetts Historical Society,* occur these words: "The insipidity of this (a sort of *bouillie* of corn) he (Rasle) corrected, he says, by adding sugar to it, which was made in the spring of the year by boiling down the sap of the maple, which they collected in bark troughs as it flowed from incisions made in the trunk of the tree. These particulars are quoted because it is curious to know that the method of extracting the *bayberry wax*† and making maple sugar, articles of considerable importance to us, has been learned of the aborigines." It is worthy of remark that the Indians amongst whom Father Rasle moved used the sugar for the same purpose as did those noticed by Joutel, viz., to sweeten their *sagamité* (III, 343).

Miss E. F. Jones,‡ in her "History of Stockbridge," says: "The Muh-he-con-ne-ak (Mohegans of western New England), besides the articles of food mentioned in the preceding chapter, manufactured large quantities of maple sugar; and, indeed, we seem to be chiefly indebted to them for the knowledge of this luxury, for as late as 1749 Mr. Hopkins, in writing of Stockbridge and the Indians, not only describes its taste and the manner in which it is *made*, but tells *what it is*, as if very little known." It is matter of regret that very early data regarding the use of maple sugar in New England, while no

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* Sec. series, VIII, p. 252.

† This other gift of the Red Man to his conquerors and successors deserves to be noted. The writer of the memoir refers to the account of Rasle himself in the *Lettres Edifiantes*.

‡ Stockbridge, Past and Present (Springfield, 1854), p. 23; Comp. Coll. Mass. Hist. Soc., 5th Ser., III (181, date of 1784); *Ib.*, 2nd Ser., III (114, date of 1814); Belknap's Hist. of New Hampshire (1792), pp. 113–116; Dwight (1823), I, 15.

doubt existent, are not yet obtainable. In the "Canadian Settlers' Guide" (1860) the following passage is to be found: "The Indian sugar (maple), which looks dry and yellow and is not sold in cakes, but in birch boxes, *mowkowks*, as they call them, I have been told owes its peculiar taste to the bark vessels that the sap is gathered in, and its grain to being kept constantly stirred while boiling" (p. 66).* The use of the term "Indian sugar" would seem to imply that the article was regarded as of Indian origin.

Besides these, there are interesting notices of sugar-making in La Hontan,† Carver,‡ Hunter,§ etc. The latter tells us that the thirteenth month of the year was called by the Indians the "sugar month," because "in it they manufactured their sugar from the maple and box-elder trees." || To the Algonkian tribes the Iroquois apply the name of *Ratirontaks—i. e.*, "tree-eaters," and Dr. Brinton (Lenâpé and their Legends, p. 255) has suggested that "probably they were so called from their love of the product of the sugar maple." ¶

That there were amongst the Algonkian tribes many myths and legends relating to the maple tree is beyond all doubt. Among the Mohicans we find the general explanation of the origin of the sap of trees. These Indians believed that the snow, which melted in the spring, furnished the trees with sap, the snow itself being nothing else but "the dripping oil" of the celestial bear slain by the hunters in the winter time.** According to an Ottawa and Chippewa legend the "sugar tree did produce sap, at certain seasons of the year, which was almost like pure syrup." Mr. A. J. Blackbird, in his "History

* For other references to sugar-making by Canadian Indians see "Copway's Life," p. 26; Zeisberger's Diary (ed. Bliss), *passim;* Six Years in the Bush (1838), p. 105; Mrs. Jameson, Winter Studies and Summer Rambles (1838), III, 217; Hind, Red River Exploring Exped. (1860), I, 160.

† I, 249, cited by "R. C." in Amer. Antiquarian, XII, 234. See also Pinkerton, XIII, 270, 309.

‡ Travels (Lond., 1778), p. 496.

§ Memoirs of a Captivity (3rd ed., Lond., 1824), p. 290.

|| Hunter, Manners and Customs, etc. (Phil., 1783), p. 313.

¶ It is hardly likely that the Iroquois distinguished other tribes by this term, if its origin be as suggested, since they themselves were sugar-makers and eaters. A more probable origin of the word is that given by Schoolcraft (Notes on the Iroquois, 1847, p. 152), in substance as follows: Ratirontaks, whence Adirondacks, was applied chiefly to the Montagnais tribes north of the St. Lawrence, and was a derisive term, indicating the well-known habit of these tribes of eating the inner bark of trees in winter when food was scarce or when on war excursions.

** Miss E. F. Jones, Stockbridge, Past and Present, (Springfield, 1854,) p. 216.

of the Ottawa and Chippewa Indians of Michigan" (p. 72), tells us how the mischievous Ne-naw-bo-zhoo tasted it, and then diluted the sap until the sweet taste disappeared. "Then he said, 'Now my nephews will have to labor hard to make the sugar out of this sap, and the sugar will be much more valuable to them in the future time.'"

This myth, in more or less similar form, doubtless exists among other neighboring Algonkian tribes. The following is the Menomini form of the story as communicated by Dr. W. J. Hoffman, who obtained it in August of the present year at the Keshena reservation:

"One day Nokomis, the grandmother of Manabush, was in the forest and accidentally cut the bark of a tree. Seeing that a thick syrup exuded from the cut, she put her finger to the substance, and upon tasting it found it to be very sweet and agreeable. She then gave some of it to her grandson, Manabush, who liked it very much, but thought that if the syrup ran from the trees in such a state it would cause idleness among the women. He then told Nokomis that in order to give his aunts employment and keep them from idleness he would dilute the thick sap. Whereupon he took up a vessel of water and poured it over the tops of the trees, and thus reduced the sap to its present consistency. This is why the women have to boil down the sap to make syrup."

Mrs. Jameson* relates the Chippewa story of the metamorphosis of Nishosha, the magician, into a maple tree: "Every moment he found the numbness creeping higher and higher; he felt his legs growing like roots; the feather on his head turned to leaves, and in a few seconds he stood a tall and stiff maple tree, leaning towards the water." This legend may perhaps account for the explanation of the name *aninatik* or *ininatik*, as "man tree," a conception natural enough to the Indian mind.

In the "Algonquin Legends of New England" † there is frequent mention of maple sugar. It is by no means clear, however, that the article has not been lately introduced into the stories.

The desirability of further information regarding Indian terms for "maple" and "sugar" is very great. As far as the Algonkian

* Winter Studies and Summer Rambles in Canada (London, 1838), III, pp. 112–113.

† In a Passamaquoddy Tale, p. 121; Micmac, pp. 177–225, where it is stated to have been part of the good things in the wigwam of Lox.

tongues are concerned, the origin of the words used to denote these does not seem as yet to have been placed beyond all doubt.

Among the Mississagwas of Ontario the terms employed are: Hard maple, *āninātik;* soft maple, *tchigimānish;* sugar, *sisīpākwat;* maple sugar, *āninātik sisīpākwat;* maple sap, *sisīpākwatābō* (*i. e.*, sugar liquid). These correspond to the words given in Baraga's and Wilson's dictionaries of Otchipwé. With the Algonkians of the Lake of the Two Mountains* the words are: Maple, *ininâtik;* maple sugar (and then, by extension, all kinds of sugar), *sinzipakwat;* maple sap, *sinzipakwatwabo* (sugar liquid). At an Algonkian settlement, in the northern part of Hastings county, Ontario, the writer, in September, 1890,† found the following terms to be in use: Hard maple, *nīnātik;* soft maple, *tchigōmēnish;* sugar, *sinzhabākwat;* maple sugar, *nīnātik sinzhabākwat.* In Cree we have: Maple sugar, *sisibâskwat;* maple, *sisbaskwâtâttik* (*i. e.*, sugar tree), the latter being a derivative of the former, and differing entirely from the more widespread Algonkian term *āninātik.* Schoolcraft records, as used by the Delawares of New Jersey, the word *onsikââmme* for "maple," and in the Lenâpé-English Dictionary, lately published by Dr. Brinton and Rev. A. S. Anthony, we find for "maple tree," *schiechikiminschi,* which, the latter states, is applied by the Delawares of Canada to the "soft maple." Among the Ottawas ‡ the term *assanânig* (in Ojebway *assanâmij*) is used, a word possibly having some connection with *assana,* "it is pressed down."

Now, with regard to the etymology of some of these terms. The derivation of the Cree *sisibâskwat,* and the cognate words in Mississagwa, Ojebway, and Lake of Two Mountain Algonkin seems to be that given by Mr. Beaulieu (III, p. 350). This Western Algonkian word for "maple sugar" signifies "squeezed stick, wood," the first part being a derivative of the root *sin,* which contains the idea of "causing to flow by pressing that in which anything is contained." It might be said, however, that this word would apply better to the "sugar-cane" than to the "maple tree."

But in Otchipwé we find an entirely different word for "sugar-cane," viz., *sibwâgan* (Baraga), *sebwâhgun* (Wilson), a name which is also given to the "corn-stalk." From this is derived the words

* Cuoq, Lexique de la langue algonquine.

† P. 128.

‡ Baraga, Otch. Dict., p. 51.

sibwâgani-sisìbâkwat, "cane-sugar, brown sugar, Havana sugar," and *sibwâganâbo*, "molasses" (of the sugar-cane), which latter is never used to signify "maple molasses," for which the correct term is *kitchi jiwâgamisigan* ("great maple syrup"), the term for "maple syrup" being *jiwâgamisigan*, referring to the nature of the sap. Besides the term *sisibâkwat* there are applied to "maple sugar" in Otchipwê* the following names: *Sigaigan, misiwetchigan, nesséigan, pigiwisigan.* Of these, *sigaigan*, used of a "moulded sugar cake," properly signifies "any moulded object" (from *nin sigaige*, "I mould"); *misiwetchigan* denotes "anything made all of one piece" (from *misiwetchigade*, "it is made all of one piece"); *nisseigan* is applied to maple sugar, "loose, not in solid cakes" (from *nisseige*, "I stir"); *pigiwisigan* signifies "maple sugar made to resemble pitch" (*pigiw*).

For the derivation of the Algonkian term *aninâtik, ininâtik*, some four etymologies have been suggested. The guess of Tanner (III, 349), *nin-au-tik*, "our tree," may be dismissed as untenable, as may also be one put forward by a Mississagwa friend of the writer, who thought the word might mean "hard tree." There remain, however, two etymologies well worth our consideration. The first would make the word in question signify "man-tree," either from a conception of the tree as man-like (with respect to the sap probably) or from some myth such as that noted above. The other, which explains *ininâtik* as meaning "*the* tree," has the weight of Cuoq's authority in its favor.† The word would then contain, as first component, the root *inin*, "true, genuine, proper, natural, par excellence." To decide between these two is difficult; perhaps the etymology of Cuoq is more likely to be the true one. It is to be regretted, however, that our inquiry into the derivation of this name seems to cast little light upon the real question. Perhaps a further investigation into the names given by these and other Indian tribes to the maple and its products may result in something satisfactory and conclusive.

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*See Baraga, pp. 166, 174, 249, 303, 354, 366, 367.

† He says: "*Ininâtik*, l'arbre par excellence, érable." Compare *ininandak*, fir, etc. Lex. alg., p. 128.

ABORIGINAL FIRE-MAKING.—An error has crept into the interesting and learned article by Mr. Hough on *Aboriginal Fire-Making* in the last number of the ANTHROPOLOGIST, which seems worth correcting. On page 367 we are told that "wood that is 'punky'—that is, soft from dry-rot or worm-eaten—is preferable. This is the kind of wood spoken of by Festus and used by the Vestals: 'Mos erat tabulam *felicis* materiæ tamdiu terebrare quousque exceptum ignem cribro æneo Virgo in ædem ferret.' 'It was the custom to bore into a plank of *combustible* wood, upon which they had hitherto made fire, which a Vestal virgin received on a brazen sieve, which she carried immediately into the temple.'"—Festus: *Ignis Vestæ.*

I have corrected two misprints in the Latin quotation, and have italicized *felicis* and *combustible*, which are regarded as equivalent terms. But the word *felix* has a very different signification in this passage. What it means we learn from Macrobius, *Saturnalia*, Lib. ii, cap. xvi. He tells us that certain trees were called *felices*, and were consecrated to the superior deities, in contradistinction to others, which were under the protection of the deities of the lower world, and which were called *infelices*, in the language of the writers upon *pontifical words*—that is, ancient religious terms. Accordingly, in rekindling the sacred fire of Vesta, if it ever happened to become extinguished, it was indispensable to make use of particular kinds of wood, well-known to the pontiffs, and of which a list is given by Macrobius. But Pliny, Nat. Hist. xvi, 77, (207), designates the sorts of wood which were ordinarily used for kindling fire by rubbing them together; these were not the same as those given by Macrobius.

This vexed question about the method of rekindling the sacred fire of Vesta has been recently treated with great learning by Mr. Morris H. Morgan in an essay, *De ignis eliciendi modis apud antiquos*, in the Harvard Studies in Classical Philology, Vol. i, pp. 56–64.

HENRY W. HAYNES.

BURIAL CUSTOMS ON THE WEST COAST OF AFRICA.—"Jakry men have a great veneration for Warré. The corpses of 'big men' are taken there for burial after death, while in the case of 'small men' only the hair and toe and finger nails are taken. The same custom applies to Jakry women. The bodies of slaves are consigned to the bush or river."—(Sir Alfred Moloney, Governor of Lagos, in *Proceedings of the Royal Geographical Society*, p. 606, October, 1890.)

ARROWS AND ARROW-MAKERS.

INTRODUCTION

BY OTIS T. MASON.

A great deal has been written about the bow. Mr. Murdoch, of the Anthropological Society, published an elaborate paper on the Eskimo sinew-backed bow; Mr. Balfour, of Oxford, has recently discussed the compound bows of the world.

Down to the fifteenth century the arrow was the most celebrated and most widely distributed missile of destruction, when it began to be displaced by the bullet. Before it gave place to fire-arms, I have no doubt it wrought more death than the substitute has since produced.

The displacement of the arrow was tardy even in the birth-place of fire-arms and was brought about, not by the facility with which the musket could be handled, but by the efficiency of armor. In that perpetual conflict between offense and defense in the enginery of war, defense had been able to quench all the fiery darts of the adversary; the arrow could not pierce the harness of the enemy. At this point came the bullet, slow and not sure; the English archer could discharge thirty arrows while the arquebusier was making a single shot. But when he did get the machine to go off, and, peradventure, if the missle struck its mark, it penetrated any known armor. Its terrible noise and longer range were also in its favor. In lands distant from the center of European culture the arrow has not yet disappeared, and the day of its birth is hidden in the remotest past.

The continent of America furnished the best of facilities for the development of this winged messenger of death. Every variety of climate, material, and game are here to create an indefinite diversity of structures. In its simplest form the arrow is a straight rod, pointed perhaps in the fire. Such a missile would be of little worth

and could not be aimed with any certainty. The most highly developed examples in America consist of:

Head, involving point, faces, facets, sides, butt, tang, barbs, barb-piece.

Seizing.

Foreshaft.

Shaft, involving shaft streaks.

Shaftment, involving riband or owner marks.

Feather, including seizing, glue, and rifling.

Nock, including the footing.

Notch.

Each of these parts may be varied in *number, form, material, or artistic finish*, and one or more of them may be wanting. It will be seen at once what an excellent instrument the arrow is for the study of the natural history of invention; how it has been influenced by climate, natural scenery, and material resources; how it has modified with function, and developed complexity with age. (Fig. 5.)

VOCABULARY OF THE ARROW.

Arrow, a missile shot from a bow. The possible parts are the head, barb-piece, foreshaft, shaft or stele, feathering, nock, and seizings.

Arrow cement, substance used in fastening the arrow-head to the shaft. A few tribes use glue or cement in making the sinew-backed bow.

Arrow-head, the part of an arrow designed to produce a wound. The parts of the primitive stone arrow-head are the tip or apex, faces, sides, base, shank or tang, barbs, and facets.

Arrow-straightener, a piece of bone, wood, or ivory, with a perforation to serve as a wrench in straightening arrow-shafts, barbs, etc.

Barb-piece, the piece of ivory, etc., on some arrows attached to the true head, and having barbs on the sides. This should be carefully discriminated from the foreshaft, which has another function altogether.

Base of an arrow-head, the portion which fits into the shaft.

Bow-shot, the distance to which an arrow flies from a bow.

Chipper or *flaker*, the pointed implement of bone, antler, etc., used for shaping flint arrow-heads, spear-heads, etc.

Cock-feather, the feather of an arrow which is uppermost when the bow is drawn.

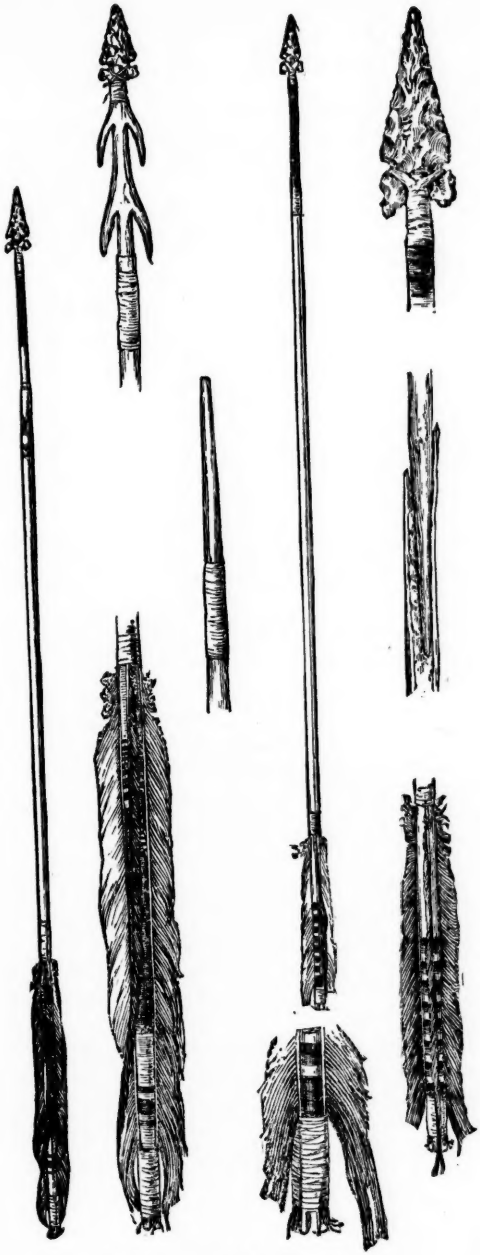

FIG. 5—Analysis of the arrow.

Faces, the broad, flattened portions of an arrow-head.

Facets, the little surfaces left by chipping out a stone arrow-head.

Feathering, the strips of feather at the butt of an arrow, including the method of seizing or fastening.

Flaking hammer, called also a hammer-stone, a stone used for knocking off flakes in making flint arrow-heads, etc.

Fletcher, an arrow-maker; akin to *fleche*.

Footing, a piece of wood inserted in the shaftment of an arrow at the nock.

Foreshaft, a piece of hard wood, bone, ivory, antler, etc., at the front end of an arrow to give weight and to serve for the attachment of the head.

Nocking, placing the arrow on the string preparatory to shooting.

Pile, the head of an archery arrow; any arrow-head may bear the same name, in which we may have a one-pile, two-pile, three-pile arrow, etc.

Pitching-tool or knapping-tool, a column of antler or other hard substance used between the hammer and the core in knocking off flakes of stone.

Riband, a term applied to the stripes painted on arrow-shafts, generally around the shaftment. These ribands have been called clan-marks, owner-marks, game-tallies, etc.

Shaft, anciently an arrow, but strictly the portion behind the head, and in a fore-shafted arrow the lighter portion behind the fore-shaft.

Shaft-grooves, furrow cuts along an arrow-shaft from the head backward; they have been called blood-grooves and lightning-grooves, but these names are objectionable as involving theories.

Shaftment, the part of an arrow on which the feathering is laid.

Shank or *tang*, the part of an arrow-head corresponding to the tang of the sword-blade.

Sides of an arrow-head, the sharpened portions between the apex and the base, also called the edges.

Stele (stale, shaft), the wooden part of an arrow; an arrow without feather or head.

Tip, a term applied to the sharp apex of an arrow-head.

Trajectory, the curve which an arrow describes in space; may be flat, high, etc.

Whipping (seizing, serving), wrapping any part of a bow or arrow with cord or sinew regularly laid on.

There are some nice questions concerning the arrow which my colleagues will discuss; others are yet in doubt. I do not think we are yet authorized to say that all tribes distinguished the rhomboidal hunting arrow head from the barbed war arrow head. The shaft streaks are called blood grooves by some writers, lightning grooves by others. In the one case the motive is practical, in the other it is magical. The grooves are present on many arrows—long straight channels, zig-zag lines, broken lines, and so on. The reason assigned by the ordinary Indian has never satisfied my own mind, although the magical reason seems to me nearer to his psychical state.

MANUFACTURE OF STONE ARROW-POINTS.

BY W. H. HOLMES.

The arrow-point was usually made of some material firmer and heavier than the shaft, and was attached by means of thongs and cement. Its purpose was to insure greater accuracy and range, and to give greater penetrating power to the weapon. Stone, though apparently but poorly adapted for such a purpose, has been very generally employed by primitive man, as the countless numbers of flaked points scattered over the face of the country amply testify.

It is not possible in all cases to distinguish points made for the arrow from those made and employed for projectiles thrown by the hand, or throwing stick, or from those intended to be hafted and used as knives, daggers, drills, and the like. It is not unlikely that many points were alternately used for a number of purposes as necessity demanded. In genesis the stone arrow-point is substantially identical with other similar objects of flaked stone. The knowledge and the skill that enabled the savage to secure and shape the stone in one case served equally well in all others.

The implement of chipped stone found in the hands of our aborigines was evolved through a succession of more elemental forms, but the series of steps from the earliest form to the finished tool of the highest type cannot be definitely traced; in a way, however, the progress of manufacture of each individual of the highest type repeats the steps of the evolution of the species or group to which it belongs. This becomes apparent when it is observed that the act concerned in producing the first flake has but to be repeated with proper modulations and refinements to produce the elaborated object.

The materials suited for flaking are very numerous. Those in ordinary use in this country include vein quartz, chalcedony, agate, jasper, flint, hornstone, chert, novaculite, slate, argillite, quartzite, and obsidian. Rare forms, such as quartz-crystal, carnelian, amethyst, opal, etc., were also employed when available.

Primitive man became a mineralogist almost with the first use of unworked stones, for he had to consider grain, density and toughness, and it was not long perhaps before color and translucency became important considerations through the association of ideas of a mystic nature. Little by little and through a long series of exploitations and experiments he learned to utilize all suitable stones that came within his reach.

When an implement of chipped stone was to be made it was necessary first to secure the raw material. Erosive agencies had scattered countless fragments of flakable stones over the face of the country, and these were gathered and used; but when such materials became scarce or were not within convenient reach, excavation was resorted to. This led to the discovery that freshly exhumed stone was more easily and surely worked than that seasoned by long exposure, and the art of quarrying came into existence. Quarrying began with the removal of a buried or partially buried stone from its bed in the soil and culminated with the removal of hills and the tunneling of mountains.

The conditions under which the various rocks exist are greatly varied. Slate, quartz, quartzite, chert, obsidian, and indeed nearly all forms are constituent parts of the solid rock-mass of the earth. In this form even civilized man finds them extremely difficult to detach and remove, and savage ingenuity must have been taxed to the utmost to secure the necessary supply. In many cases nature has done much to lessen man's labor in this respect. It happens that in past ages all varieties of rocks were extensively broken up by the dynamic and erosive forces of nature, and countless numbers of fragments descended into the valleys and were taken up by water and ice and rolled and rounded and finally deposited in beds of gravel along the banks and especially about the mouths of rivers. In this rolling process all the soft and friable stones were reduced to powder and the tough, flinty, flakable pieces were selected and preserved as if by intelligent design for the use of the stone-age man. These bowlders were much more readily quarried than the same rocks in their original beds. Equally convenient for use were certain nodular

forms of flinty rock which are commonly weathered out, but which were also to some extent quarried.

When detached fragments, bowlders, and nodules were not sufficiently plentiful or ceased to be desirable for working, the rocks in place were attacked, bowlders were removed from their beds, splinters were broken from exposed masses of rock, and ledges were followed deep into the earth.

In Arkansas there are pits dug in the solid rock—a heavily bedded novaculite—to the depth of twenty-five feet and having a width of one hundred feet or more. In Ohio and in other States similar phenomena have been observed.

In the District of Columbia extensive quarries were opened in the gravel-bearing bluffs, and millions of quartzite and quartz bowlders were secured and worked.

The extent of this native quarrying industry has not until recently been realized. Such work has been considered beyond the capacity of savages, and when the ancient pits were observed they were usually attributed to the gold-hunters of early days, and in the South are still known as Spanish diggings. From Maine to Oregon and from Alaska to Peru the hills and mountains are scarred with pits and trenches. The ancient methods of quarrying are not well known, and up to the present time no tools have been discovered save rude hammers of stone improvised for the purpose. Picks of bone or antler and pikes of wood were probably employed. Associated with these pittings are ample evidences of the object of their excavation. Great heaps or encircling ridges of refuse, in cases containing hundreds of tons of the refuse of manufacture—fragments, flakes, failures, and tools broken in use and deserted when the work ended—are found. A study of this refuse usually indicates clearly and fully the nature and extent of the work carried on.

The raw material having been secured, the work of shaping began. The steps in this work were in all cases essentially the same, although they varied in detail with the material, the form to be produced, and the skill of the workmen concerned. Obsidian and other easily flaked stones were broken into masses, so shaped as to facilitate the subsequent removal by special processes of flakes for knives and projectile points. These masses became the cores so frequently found among our ancient remains, and were drawn upon when occasion required. In other cases simple flakes suited for subsequent specialization were made or were selected from the refuse on the site of supply

and carried away; and again suitable pieces were selected and reduced on the spot to a form approximating the final object. In all of our great quarries this latter appears to have been the leading feature of the work done. These flakes and roughed-out forms were the blanks, tested for material and reduced to approximate form, and to a size convenient for transportation, to be chipped into specific shapes when and where it suited the purposes of the possessor. In case of many of the great quarries little or no finishing was done upon the sites.

In most cases the shaping operations carried on in the quarry can be followed out with reasonable certainty. On all sites where the raw material was extensively worked, series of forms can be secured illustrating every stage of the morphology. These series begin with the amorphous mass or natural shape, and pass through a succession of modifications, ending in the rude blade or blank. The making and collecting of flakes and fragments to be carried away in an unshaped condition, although undoubtedly carried on in all quarries and upon sites of other sources of raw material, leave little or no refuse that can be studied to advantage.

Large masses in quarries or on simple shop sites were reduced by means of rude hammers with or without hafting. Fire was often employed as an auxiliary in this work. Approximate masses were reduced to more definite shapes by a succession of free-hand blows. The first step in the shaping of an implement from a bowlder is illustrated in Fig. 6. In this work the free-hand blow is employed for the reason that no other method would be efficacious. Fig. 7 illustrates the position in which the partially shaped mass must be held after its margins have become too sharp to be split by a blow directly upon the edge.

When the incipient implement became too attenuated or fragile to withstand the blows necessary to flaking without imminent danger of breaking, other methods had to be employed. The statement has been made by some writers that arrow-points are produced by simple percussion, the hammers being reduced in size to correspond with the increasing fragility of the object worked. This process, however, must be exceptional.

Instances are recorded in which indirect percussion—that is, the use of a mallet and punch—was employed in removing flakes intended to be shaped by pressure. Two varieties of indirect percussion are illustrated in Figs. 8 and 9. The first is practiced by the Wintuns

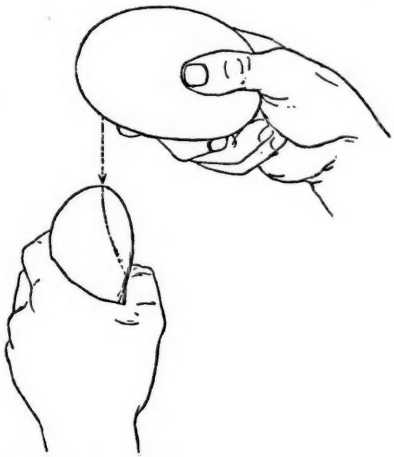

FIG. 6.—Free hand or direct percussion; first step in shaping an implement from a bowlder.

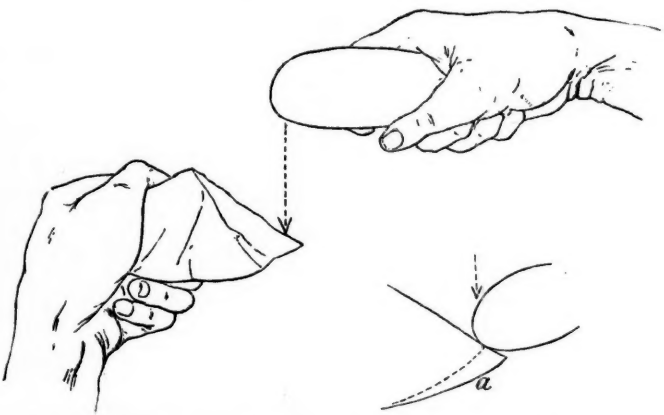

FIG. 7.—Direct percussion; manner of striking where the edge is sharp.

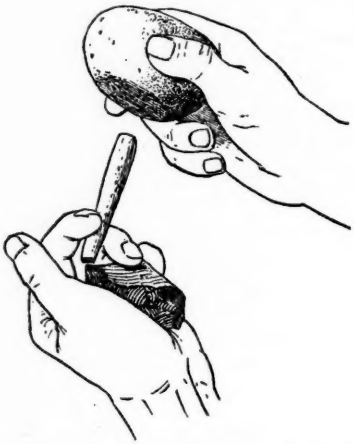

FIG. 8.—Indirect percussion, as practiced by the Wintuns, and described by B. B. Redding.

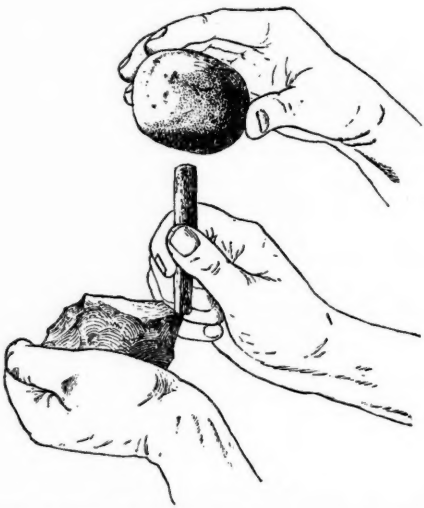

FIG. 9.—Indirect percussion, two persons being concerned; practiced by the Apaches, according to George Catlin.

of California and other tribes. The drawing is made from a very careful description by B. B. Redding. The second is derived from the observations of George Catlin. According to Catlin, the point is sometimes carried to a finish by the indirect stroke, two persons being employed in the operation, as shown in Fig. 9. As a rule, however, the method of manipulation was changed at the proper stage from percussion to pressure.

The blanks from the quarries—the roughed-out blades and selected flakes, as well as similar products from all varieties of sites—had acquired such outline, attenuation, sharpness of edge, and bevel when the change from percussion to pressure took place that the gentler method would be operative. It is probable that in many cases the work was transferred from operatives skilled in the blocking-out to others especially skilled in shaping by pressure; but it is also pretty certain that nearly every hunter was able, in case of necessity, to shape his own arrow-points, howsoever roughly, from the raw material.

The flaking of stone, and especially that part of it relating to the making of arrow-points, has very generally been regarded as a great mystery and is often spoken of as a lost art; but the art is still practiced by many of our aboriginal tribes, and it appears that almost any one who desires can by a little systematic practice do the work. Of course to acquire great skill much practice is necessary, but the methods are for the most part so well known and so simple that the mantle of mystery no longer enshrouds them.

When pressure is first suggested as an adequate means of flaking hard stones, doubt is usually felt as to its competency, and when it is stated that the tool used is not of metal or of stone, but of bone or ivory, incredulity is usually expressed; but the test is easily made.

A blank form or a flake having the approximate shape is held firmly between the fingers and thumb of the left hand. A firm piece of bone having a rather thin edge or angle like that of a three-cornered file is taken in the right hand and set upon the sharp edge of the stone and at right angles to it so firmly that a slight cut or notch is made in the bone, then with a quick, firm movement of the right hand, met by a similar movement of the left, the bone is made to move across the edge of the stone (Fig. 10), in doing which it takes with it a flake, varying in length, width, and depth with the skill and power of the workman, the nature of the stone, etc. A rapid repetition of this operation, accompanied by a proper resetting of the tool,

quickly reduces the piece, if it works readily, to almost any desired outline. The position and manner of holding may be changed, as

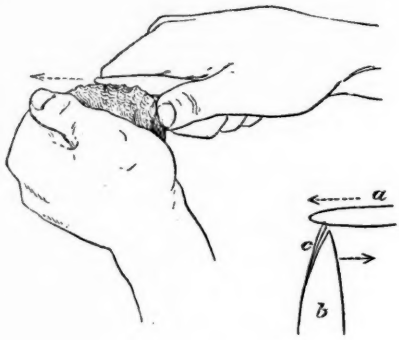

FIG. 10.—Flaking by pressure, a bone implement being used. *a* the bone tool, *b* the stone, *c* the flake.

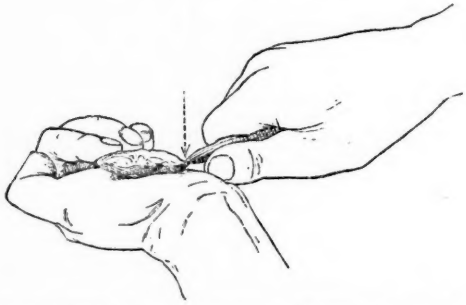

FIG. 11.—Flaking by pressure; manner of holding as observed among many tribes by J. W. Powell and others.

shown in Fig. 11. In both cases the hand holding the stone must be protected against cutting by the sharp flakes by a piece of buck-skin or leather. This is true of some of the other cases illustrated.

The same result may be obtained in various other ways, but always by means of suddenly applied or spasmodic pressure. Numerous methods of applying this pressure are known. The blank may be held down

by the fingers upon the edge of a table or board, as shown in Fig. 12, and the point of the bone or of a bit of metal as well, held in the other hand, may be set so as to catch the edge of the stone to a width corresponding to that caught by the notched bone in the other position, when a quick downward pressure upon the flaking-tool will remove the flake. Again, in larger work, where greater force is required to remove the flakes, a tool long enough to place against the arm or

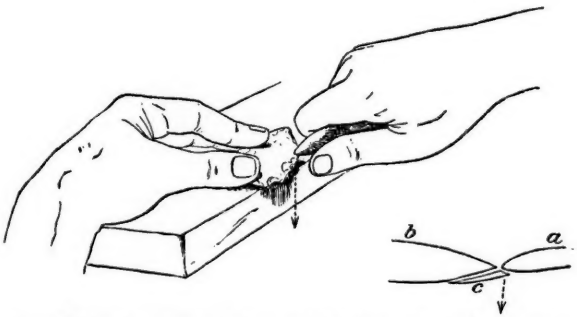

FIG. 12.—Flaking by pressure, a bone point being used, the implement to be shaped resting upon a support.

chest of the operator may be used. In this way much additional force is thrown into the spasmodic movement. Another device consists of a notched or forked bone or pincers, which is set upon the sharp edge of the blank and given a sudden twist, thus removing the flake (Fig. 13).

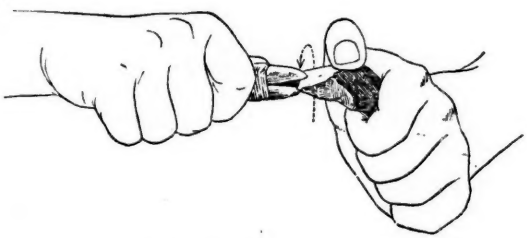

FIG. 13.—Flaking by pressure, bone pincers being used.

Methods vary with different peoples and differences in the material lead to variations in treatment by the same people. Eye-witnesses have described the processes employed by many widely separated tribes, but extracts from these records would add too greatly to the length of this sketch.

FORMS OF ANCIENT ARROW-HEADS.

BY THOMAS WILSON.

The arrow-heads, spear-heads, and knives of the prehistoric races have such likeness of form, style, and size that a line of division between the three is practically impossible. A small implement may be an arrow-head; a large one of the same type may be a spear-head, while either or both may have served as knives. The distinction might be better made if the shafts or handles remained; but these, together with the lashings and attachments, have decayed and disappeared, except when bitumen or gum has been employed.

An implement of this kind, whether large or small, with a light, long shaft, would be an arrow; the same with a heavy, long shaft would be a spear, while either of them with a shaft and lashing, but *short* instead of long, would be a knife or dagger. Indeed an implement of the latter class might be accidentally made through the breaking of the shaft of a spear or arrow; but none of these implements of the real prehistoric man have been found with their shafts or handles and lashing fastenings, and so we are driven to theory for their name and uses.

The classification of stone arrow-heads, spear-heads, and knives has been attempted by few archæologists and with but slight success. No classification has as yet been generally adopted. Those heretofore attempted have been too complex, the divisions have been too close, and the distinctions not sufficiently broad to be popular. A classification of infinitesimal divisions, with slight differences, difficult to distinguish and still more difficult to remember, will never be satisfactory or acceptable.

I have attempted the following classification for these implements in the Department of Prehistoric Anthropology of the National Museum, believing it to be free from the foregoing objections, and yet to be broad enough to include practically all the implements of this kind made or used by prehistoric man.

The series of outlines presented in Fig. 14 will assist in giving a clear understanding of the forms described.

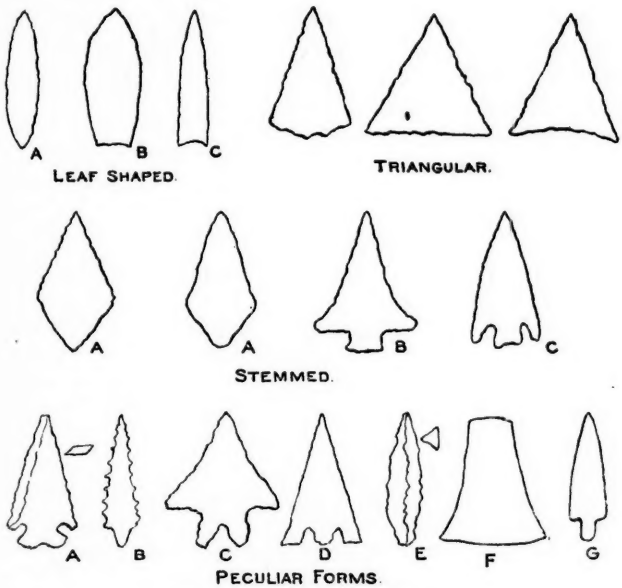

FIG. 14.—Types of arrow points.

Leaf Shaped.—Sub-class A.—Thin and usually finely chipped implements of the form of a laurel leaf—elliptical, and pointed at both ends. This includes the French Solutrēen type of the Paleolithic period of the Stone Age.

Sub-class B.—These may be thicker and ruder than sub-class A. Some are more oval, and the bases are not pointed, but are either straight or convex. This class includes the leaf-shaped argillite implements found by Dr. C. C. Abbott in the Delaware river gravels at Trenton, New Jersey.

Sub-class C.—Long, thin blades, with nearly straight edges, more like a dagger or poignard. The base may be either convex, straight, or concave. Many of them show traces of attachment to a handle by means of bitumen or gum. They are peculiar to the Pacific slope.

Triangular.—This class includes all forms approaching a triangle, whether the bases or edges be convex, straight, or concave. They are without stems, and, consequently, without shoulders, but in some specimens the concavity of the base produces barbs.

Stemmed.—This class includes all varieties of stems, whether straight or expanding, and all varieties of bases or edges, whether convex, straight, or concave.

Sub-class A.—Lozenge-shaped, rude, and indefinite stems.

Sub-class B.—Shouldered, but not barbed at the shoulder. In occasional specimens barbs are produced at the base, but only by its concavity and width.

Sub-class C.—Shouldered and barbed.

Nearly all of the convex bases are smooth, as though worn. The purpose of this is unknown.

Peculiar Forms.—These have such peculiarities as to distinguish them from other classes, but are restricted in number and locality.

Sub-class A.—Beveled edges; the bevel is almost always in one direction.

Sub-class B.—Serrated edges.

Sub-class C.—Bifurcated stems.

Sub-class D.—Extremely long barbs, usually square at the ends.

Sub-class E.—Triangular in section.

Sub-class F.—Broadest at the cutting end—*trenchant transversal.*

Sub-class G.—All those made of slate and polished.

Parts of stone arrow and spear heads or knives are: Point, base, side, edge, shoulder, barb.

ARROW FEATHERING AND POINTING.

BY WALTER HOUGH.

The attachment of points and feathering to modern arrows casts light upon ancient methods of arrow pointing and is more or less valuable ethnographically.

Materials.—Sinew is the most important material in the kit of the arrowsmith, being pliable when damp, splitting into even threads, becoming horn-like on drying, and binding parts strongly together on shrinking.

American Indian arrows, with very few exceptions, are lashed with sinew. In other parts of the world, however, sinew is not so gen-

erally employed. A glance over the collection of 2,500 arrows in the United States National Museum reveals the fact that African arrow-heads and feathering are fastened on with grass, palm-leaf strips, and other vegetable fibres, while sinew is comparatively rare. Many African arrow-heads are socketed or tanged, and therefore not lashed at all. Polynesian and New Guinea arrows are also served with vegetable fibre, the Ainos use bark, and in South America many tribes lash with natural fibres.

Glue or other cement is used by most tribes. In Angola caoutchouc is employed. In the southwest part of the United States mesquite gum, perhaps mixed with other ingredients, pine resin, etc., form readily available materials.

Methods of Mounting.—While complete arrows in museums often show plainly the methods of mounting, yet there are details only to be learned by watching the arrow-maker at work and by observing the "tricks of his trade."

It was my good fortune lately to see an Apache manufacture and set the points and feathering of arrows. Apache arrows are gen-

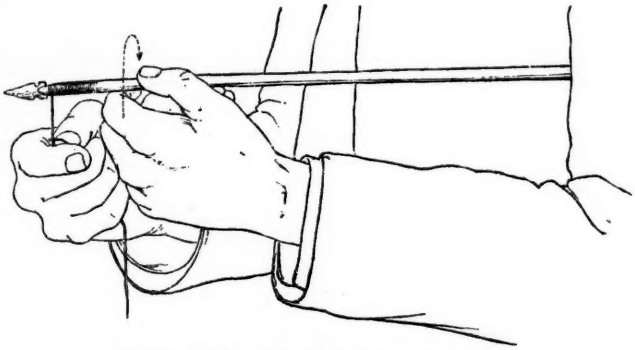

FIG. 15.—Fixing the point in the shaft by wrapping.

erally made of *tule* reed set with wooden foreshafts, the latter indispensable in mounting the head, as the reed cannot well be tapered. A nick is cut in the end of the foreshaft, a little pellet of gum is placed in the nick, set on fire, and allowed to burn for a moment; then the arrow-head is thrust into place, quickly lined with the shaft, and the gum smoothed down carefully. Sinew is then laid around the arrow below the point (Fig. 15), care being taken lest the

turns overlap. As the sinew is wound nearly to the base of the head, it is thrown over the tangs at alternate turns, forming a cross. Finally the cement is called into requisition again for the purpose of fastening off the sinew.

Sometimes the heads are set deeply into the shaft and the sinew served continuously around the arrow to some distance above the barbs, giving strong socketing and protecting the sharp angles as well as allowing better penetration. This usage is found among the Indians of northern California, who are pre-eminent as arrow-makers.

Arrows with points or foreshafts merely sharpened or with blunt or knobbed heads, the latter variety often unfeathered, are met with everywhere. Feathering is not required on such arrows, since the shaft follows the head as a string lines with a moving ball.

Feathering.—The feathering is made by splitting a strong feather and spacing three of the parts at the base of the arrow. A turn of sinew is first made to hold them in place, then they are bound on and trimmed to a gauge. Some tribes also fasten the feathers with glue; others bow or spring the feathers to aid the flight. The Point Barrow Eskimo fasten the feathers by forcing the extremities of the feather shaft into the soft wood with an ivory punch. In African arrows the wrapping thread is carried through the barbs of the feathers without disarranging them. Most arrows have triple feathering. The Eastern Indians can only be conjectured to have followed this rule, since there are no specimens of this art in existence and it is doubtful if records are minute enough to note this point. Some of the Cherokee arrows collected by Mr. James Mooney, however, have two feathers and are rifled. The Dog Rib and Iroquois Indians also used only two feathers. The Northwest Coast arrows have two entire stiff feathers lying flat against the sides of the shaft, seemingly devised to rotate the arrow. This style begins on the Columbia river and, with a few exceptions, follows the Eskimo coast fringe to Labrador. A notable exception occurs on the Yukon river and delta, where superior arrows are made. The Pima of Arizona are the only Indians south of Oregon in the western United States who employ a two-feathered arrow. The double feather reappears in British Guiana, on the Amazons, and in Terra del Fuego. In the first two localities mentioned rifling is also rather common. African arrows are the only ones in which I have observed multiple feathering, running from triple to octuple or higher.

In general, rifling the feathering is unusual. In many cases it is, perhaps, an adventitious result, though undoubtedly designed in the Pima arrow and in one specimen from the McCloud River Indians. If the Pima and Mohave arrows are all rifled, as indicated by the Museum specimens, the double feathering is explained, since rifling by means of three feathers would render the aim bad by jostling the arrow when the feathering crossed the bow. With two feathers a clearer space is left. In the Pima arrow the rifling is designed, as the feather from before is but slightly curved for some distance, then is lashed with sinew, bent more sharply, and lashed again, etc., until the turn is quite marked near the nock. Nearly the same plan is pursued in the McCloud River arrow. The rifling curve is usually small, being rarely over 90° in 4-5 inches.

It seems not a little remarkable that rifling, which is supposed to be a modern invention, should be discovered and practiced by savages; but it is undoubtedly true; and it is possible that the "beveled" arrow-heads of camp sites were designed to effect the same rotary motion.

It is the usage of some Indian tribes to leave a trail of long barbs on the feather near the nock. Very often the Sioux allow the downy plumules at the junction of the shaft and quill of the feather to remain, giving a finish and probably a tribal mark. The ornamentation of the arrow also affords tribal marks, notably among the Indians of the United States.

THE ARROW IN MODERN ARCHERY.

BY WESTON FLINT.

The remark of the old Indian, that anybody could make a bow but it took a great deal of skill to make a good arrow, is equally applicable to the arrows of the modern archer. In fact, the quality and make of the bow is far less important than the arrow itself.

It has been well said that with a poor arrow even Robin Hood himself would have drawn the long bow in vain.

From the large exhibit of arrows presented here to-night, it is readily seen that they are all very similar in their efficient characteristics. From the prehistoric specimen of the Cave-dweller to the latest skillful manufacture of Aldred or Horseman, the arrow is the same in general construction, the great difference being in the ma-

terial used and the greater or less care bestowed upon them. The differences in modern arrows are very much the same as in those of older date.

I have only time to show the essential features of the modern arrow, and to state that in the change of the use of the arrow from an instrument of warfare and hunting into an instrument of skill and precision in the modern sport of archery, very little change of form has been made except in the pile or head.

In the modern, as in the ancient weapon, two things are essential for a perfect arrow: one is straightness, which is necessary to a correct flight, and the other stiffness or rigidity, so the missile may receive the whole force of the bow without flinching or flirting, as it is termed in archery.

Modern arrows are either self—that is, made of one piece of wood the entire length—or footed—*i. e*, the front part of the arrow is made of harder wood, into which the main part is set usually in a V shape. The four principal parts of an arrow are the *stele*, the *pile*, the *nock*, and the *feathering*.

The *stele* is the body of the arrow, which is generally of the same size throughout its length and about one-third of an inch in diameter. The usual form of the best target arrow has a straight stele—that is, of the same size from pile to nock; the chested form is smaller at the point, increasing to the feathering; the bobtail form is larger at the point and decreasing to the nock, and the barrelled is larger in the middle, tapering both ways. You will notice upon examination that all these various forms are found in nearly all these exhibits, ancient and modern, and that the best of whatever nation or tribe are those conforming most nearly to the modern type, especially in regard to the stele. For target arrows old deal or pine is the best, but for hunting the stele may be of hickory, ash, elm, or pine.

The pile (*pilum*, a javelin) is the steel head, with bevel point for target shooting, and was so named from a regulation of Henry VII for keepers of the royal forests, who were obliged to use the blunt pile on account of the game; hence this became the general term for the point of the arrow. The pile for most purposes very slightly diminishes in size toward the point and ends with a blunted cone. The sharp pile is made still smaller toward the end, and the old sharp pile is a long cone ending in a sharp point. The round-ended is like the first, with a round end instead of a cone.

For the proper hunting arrow, now rarely found, a flat-barbed metal point was used, which was attached by a wrapping of wire, and this was done in much the same way as the fastening of the stone point by the Indians, previously described by Mr. Hough.

The *nock* is made of horn, with a notch or slit in which to receive the string. Its proper construction has much to do with the precision of the flight of the arrow. It must be just large enough to let the string loosen easily when the bow is drawn, and, on the other hand, must be small enough not to allow any vibration on the string.

Last, but not least, is the *feathering*. Most arrows have three feathers, a very few, two. In proper modern archery there are always three feathers, and these are arranged on the sides of the arrow near the nock, parallel with the stele and equidistant from each other, at an angle of 120 degrees; one feather, called the cock-feather, is always at right angles to the nock. This arrangement avoids injury to the feathers when the arrow is loosed. Experiments have been made with arrows feathered on a spiral to make the arrow turn like a bullet from a rifle, but with very poor results: first, because the feathering is injured in loosing, and secondly because this spiral motion rather retards the flight of the arrow without giving greater precision.

The length of the target arrow varies very little at the present time, being 28 inches for gentlemen and 25 for ladies; but expert bowmen will adjust the length of their arrows very accurately, so as to be able to draw to the full length in practice.

Roger Ascham quaintly says: "Our English yeoman who fought with Harry of Monmouth, at Agincourt, drew every man his cloth-yard shaft," and Paulus Jovius mentions the length as two cubits—that is, about a yard; but the statute of Edward IV provides that the arrow shall be three-quarters of the standard, and if this refers to the yard instead of an ell, as is most probable, the arrow used must have been 27 inches, about the standard length to-day. It is most interesting to note that this is just the old Flemish ell. Old King Lear says:

"Draw me a clothier's yard."

And in the Percy Ballads we are told:

"An arrow of a cloth-yard long
Unto the head drew he."

"The Lyttel Geste" of Robin Hode has also this line:

"And every arrow an elle longe."

From all these quotations it would seem that the length of the arrow was formerly a very important matter, as it is to-day.

The weight of the arrow of course depends somewhat upon the length, as whatever the length, it must be of sufficient size to prevent bending, and these weights are given in English silver shillings, from 4*s.* 3*d.* to 5*s.* 6*d.* for gentlemen, and from 2*s.* 6*d.* to 3*s.* 6*d.* for ladies. The proper balancing of the arrow is secured by weighting the point. In the case of target arrows the center of gravity is made to fall about one-third of the distance from the point. The flight-arrow for long-distance shooting is made lighter, much longer, and of different shape, often being smaller towards the nock, because distance, not accuracy, is the end desired. The balance is much nearer the head; the pile is rather blunt, more like a bullet, and the feathering is very light, some of the best arrows for distance having no feathering at all.

The one I used at a contest in 1883 was made from an ordinary reed with a weighted head, no feathers, and about 32 inches long. With this a flight shot of 272⅔ yards was made. Mr. L. W. Maxson, of this city, an expert in archery, made a distance of 296 yards, in this city, in 1884. This was with an unfeathered reed 33 inches long, with a leaden pile.

Some very practical lessons have been learned from the arrow in these later days. Four or five years ago, while the Archery Club was practicing in this city, General Meigs was much interested in the practice scores, and with Captain Bartlett, a member of the club, made a study of the practical use of the arrow in throwing over buildings fire-escape arrows with lines attached; and it was partly from experiments like these that the dynamite projectile, nearly like an arrow, was planned by Captain Medford and others. The projectile carrying the dynamite was made of various shapes, but all were modeled upon the plan of the arrow. They were constructed with a large stele with frustum-shaped base, or an oval head with small stem and a flanged, blunt cone at the base, which answered the purpose of the feather in guiding the missile through the air.

There has always been a great fascination in the use of the arrow, and the late revival of archery is not strange. Even as late as 1816

a silver arrow was shot for at the famous Harrow school, in England, founded by John Lyons, and an arrow was sculptured upon the old school-house and used to be stamped upon all the book covers provided by the foundation.

POISONED ARROWS.

BY DR. W. J. HOFFMAN.

In making a brief reference to the poisoning of arrows it is not practicable to discuss the philosophy of the question. Primitive man is not a toxicologist, and probably owes his knowledge of the effects of venom, vegetal poisons, and putrid animal matter, to actual observation. These effects, however, are in his mind attributable, not to septic or other poison *per se*, but to the supposed presence of malevolent spirits or demons which enter the body of the victim and destroy life. Apart from this, substances are employed also on account of their association with something peculiar to the plant or animal from which they may be derived, as will be observed farther on.

Poisoned arrows were apparently used in prehistoric times* in Europe. Later on, in the fourth century, Quintillian, lieutenant of Maximus, encountered the Franks upon a barricade of trunks of trees, from which height they threw poisoned arrows as from catapaults. Wounds inflicted by these weapons were sure to cause death.† The Celts and Gauls, according to Aristotle, Strabo, and Pliny, poisoned their arrows with the juice of a plant of the genus hellebore, called *lineum*. The Dalmatians and Daces employed the *Aster helenium*.‡

The Scythians, according to Aristotle, prepared their arrow poison by mixing serpent venom with the serum of putrid blood. Other instances are related in classic literature of peoples of the Black Sea and in Asia Minor who practiced similar arts, but the preceding allusions will suffice.

The Ainos of Japan prepare a poison which is spread upon bamboo or metal arrow-points. It is stated that game killed by this

* Bull. Soc. d'Anthrop, Paris, I, 1859, p, 51; also, Comptes rendus de l'Acad. des Sc., Paris, XLVI, p. 900.

† Gregory de Tours, *Historia Francorum*, lib. II, cap. V.

‡ Paul d'Egine, liv. XXXVIII, trans. by de Brian, p. 347. [Quoted from Lagneau, in Bull. Soc. d'Anthrop., Paris, 1883, p. 211.]

means is eaten without injury, a small portion of the flesh surrounding the wound only being cut away. The practice obtains to considerable extent in Java, Borneo, New Guinea, and other of the East India Islands, the famous Upas poison being obtained chiefly from *Strychnos tiute* and *Antiaris toxicaria*.*

The practice of poisoning arrows prevails extensively in Africa, the most conspicuous localities being the west coast, in the Gaboon, among the Somali, in the neighborhood of Bunder Marayah, and among the Bushmen. The latter employ the juice of a *Euphorbia* mixed with the pulp of a venomous worm. A certain species of bulb—*Hæmanthus toxicarius*—also enters into the composition of one variety of poison.

The best known and most active of arrow poisons is the Woorara or Urari, of the northern portion of South America. Drs. Hammond and Mitchell† have published extensively their researches regarding this substance. This is chiefly used on the tips of darts blown from the *sarabacana* or blow-gun. The composition varies somewhat, according to the tribe making it. The chief active ingredient appears to be the juice of *Strychnos toxicaria*, though to this are added other vegetal substances and serpent venom. This poison is known under a variety of names, according to locality and tribe. In Central America poisons are also used, both upon arrows and blow-gun darts. The Caribs employed a poison made from the sap of a tree termed the "Mancenilles."‡ The antidote was the application to the wound of a poultice of a farinaceous substance, which subsequently became known to us as arrow-root. The natives of Florida are reported by various authors to have been acquainted with arrow poison, and Pontius, when in search of the Fountain of Youth, is said to have been wounded by a poisoned arrow, from the effect of which he died.§

Considering the status of the Nahuatl or Aztecs and their geographic position, surrounded by peoples familiar with this practice, it appears rather singular that no reference is made by any of the historians to the use of poisoned arrows, although possibly they

* Lechenault, Ann. du Mus. l'Hist. Nat., Paris, XVI, 1810, pp. 459-482.

† Am. Journ. Med. Sci. Philada. (n. s.) XXXVIII, 1859, pp. 13-60; also Physiological Memoirs, W. A. Hammond, M. D., Philada., 1863, 271-294.

‡ César de Rochefort, Histoire Naturelle et Morale des Isles Antilles de l'Amerique. Rotterdam, 1681, 526.

§ Peter Martyr, lib. III, cap I.

possessed a knowledge of poison for internal administration, as is indicated by the statement that Tecocis, the predecessor of Axayaca, son of Montezuma, was poisoned because of his cowardice and aversion to war.*

The Seris of northwestern Mexico prepared poison by putting into a hole in the ground a cow's liver, rattlesnakes, centipedes, scorpions, etc., and beating them up with a stick. Into this mass the arrow-points were dipped.† The Jovas and other tribes of the same region also prepared a deadly poison. The Apaches and several neighboring tribes were, until recently, in the habit of smearing upon the arrow-head and foreshaft a mixture said to consist of decomposed deer liver and rattlesnake venom. In some instances crushed red ants, centipedes, and scorpions are also reported to have been used. An examination of such a coating upon arrows obtained from Apache Indians in 1871 showed the presence of blood corpuscles and a crystalline substance apparently identical with viperine (Bonaparte) or crotaline (Mitchell), the acting principle of crotalus venom. It remains to be learned how long such venom will retain its active properties, as wounds inflicted did not present symptoms of crotalus poisoning, but of septicæmia. One instance mentioned to me was originally but a mere scratch upon the upper portion of the scapula, but previous to death the flesh fell from the back as far down as the nates, exposing at various points the ribs and spinal processes. Dr. Lauderdale, U. S. Army, also informed me that he had observed the practice among the Apaches as above stated. Instances of the treatment of poisoned-arrow wounds are also on record.‡

The Lipan Apaches dip arrows into the sap of the *Yucca angustifola*, which they claim is very poisonous. Ordinarily the fleshy roots are eaten without the slightest hesitation. The leaves of the plant are sharply serrated, and it is believed by the Indians that the points possess a mystic power which will affect the victim. For a similar reason the Sisseton Sioux employ the small spines of the *Opuntia missouriense*, which are mixed with grease so as to make them adhere to the surface of the weapon to be anointed. Bullets are also prepared for the reception of this mixture by making small holes with a sharp-pointed instrument in which the spines are placed.

* Purchas, 1625, III, p. 1016.

† Hardy, Travels in Mexico, Lond., 1829, p. 298.

‡ Med. and Surgical Reporter, Philada., XIV, No. 17, pp. 321–324.

The Blackfeet, Bloods, and Piegans employ rattlesnake venom, as do also the Teton Sioux, the latter mixing it with the liver of deer or antelope and permitting the whole to become putrid. The Shoshoni and Bannack Indians state that the proper way to poison arrows, as formerly practiced by them, is to secure a deer and cause it to be bitten by a rattlesnake, immediately after which the victim is killed, the meat removed and placed in a hole in the ground. After the mass has become putrid the arrow-points are dipped into it. By this method the serpent venom is supposed to be the most essential in the operation; but it is extremely doubtful if the venom has time to fully enter the circulation in the short interval between the time that the victim is bitten and then killed. If the method was actually practiced by these Indians, as they affirm it was, and only for the destruction of noxious beasts, the poison of the putrescent matter may have caused death by septicæmia.*

The Pit River Indians of California are reported by several authors to have employed dog's liver mixed with the juice of the wild parsnip. From among the numerous other references to tribes indulging in the practice of arrow-poisoning I will mention but one or two. The Clallams of Puget Sound made arrow-points from native copper, or from fragments of this metal obtained from the sheathing of vessels, which were afterward dipped in sea water and permitted to corrode. The old chief, the "Duke of York," stated, however, that these arrows were never used against human beings. Such a statement may be taken for what it is worth, as I have yet to find an Indian who will admit the use of alleged poisoned arrows in warfare against man.

The natives on the Siberian side of Behring's Strait are said to dip their arrows in the liver of the white bear, which substance is mentioned as poisonous even while fresh.

I was told of a curious practice of the Aigaluxamūt Innuit, who endeavor to obtain pieces of flesh of a deceased whaler. The arrow-points are rubbed with this, after which the piece of flesh is worn as an amulet, in the belief that through it the wearer becomes possessed of the skill and powers of the whaler; and also that it insures accuracy of aim and success in the capture of game.

* For further description see Verhandl. Gesell. f. Anthrop. Ethnol. u. Urgesch, Berlin, 1880, pp. 91, 92; Bull. Soc. d'Anthrop de Paris, VI (III^e sér.), 1883, pp. 205–208.

In nearly all instances when poisons are prepared by Indians, either for internal administration or for the anointing of weapons or missiles, the operation is performed with more or less ceremony, chanting and incantation, for the purpose of invoking the aid of the evil spirits or demons; otherwise the compound would be ineffective.

REMARKS.

BY CAPTAIN JOHN G. BOURKE, U. S. A.

The arrows of the Apaches were specially well made. Their excellence was easily accounted for, as the main part of the shaft was made of the reed called in the Apache language the "klo-ka" or "arrow grass," which needed no straightening, whereas all those made by the tribes about them had to be straightened by a process which involved much labor and the loss of much time.

The myths of the Apaches relate that they first obtained their arrows from their gods, and that the tribe sprung from a reed swamp, and that the gods had put tips of obsidian on the shoulders of the Apaches, or, as we may make bold to translate it, had put the obsidian-tipped arrow in the quivers on their shoulders.

It is an interesting philological fact that the Apache name for bullet is "ka," or arrow. Our bullets, indeed, are only arrows propelled in a new way, as might be shown by making a vertical section of a bullet, which would be nothing more or less than a double-tanged arrow.

Mr. Edwin A. Barber, in the *American Naturalist*, described nine different kinds of arrow-tips. Each and every one of these various shapes could be seen among the Apaches to-day, and often in the same quiver several shapes would be found.

William M. Gabb, in Trans. Am. Philosophical Society, has shown that the natives of Costa Rica never barbed their arrows. Although the Apaches generally used barbs of obsidian or of sheet-iron, they also made them simply of triangular pieces of hard wood, and I have now in my collection specimens so made which in all respects resemble those first seen by Columbus upon reaching this continent. (See Letters of Columbus, in Hakluyt Society, vol. 2, p. 6, London, 1847.)

Fragments of beer bottles were utilized in making the arrow-tips,

and as far back as 1709 Lawson, in his account of the Carolina Indians, mentioned having seen such arrows. The accuracy of his statement was doubted by Squier and Davis in Smithson. Contrib., vol. 6, p. 213, but for what reason it would be difficult to say. There have been too many intelligent observers of the practice, which, after all, is a natural one, as brown glass so closely resembles obsidian that the Apaches call it "dolguini" (obsidian).

Indian Ballistics.—I have made it my business to ascertain whether or not the American Indian had such a science as ballistics, or the science of constructing bows and arrows according to standard measurements, dependent upon the height of the bowman. I found that such was the case, as may be seen by referring to my article in the last volume of this journal.* There it was shown that the flint or obsidian tips could be made in from five to eight minutes by the watch, and, contrary to what has been said, there did not seem to be any difference in the toughness of the material, whether buried under ground or exposed to the elements. This might be accounted for by the fact that Arizona is such a dry country, so little rain falling there.

In regard to the modes of feathering, I merely wish to supplement what has already been said. There seemed to be several methods, for each of which I have authorities; there was the method in use among the Apaches, of placing three feathers longitudinally and equidistant; there was the method of using only two feathers, as shown by Morgan, for the Iroquois (League of the Iroq., p. 306); by Mackenzie for the Hare Indians, (who, by the way, are Tinneh of the same family as the Apaches, who never use less than three)—(see Mackenzie, Voyages, London, 1800, p. 46), and by Cremony for the Pimas of Arizona (Life among the Apaches, p. 103). Some tribes gave a spiral twist to the feathers (see, for the Uabes of the Amazon, Wallace's "Amazon," London, 1853, p. 493; Corbusier, for the Apache-Yumas, in American Antiquarian, November, 1886; Mason, for the Hoopas, in "Science," and Morgan, for the Iroquois, as above).

On the other hand, there were tribes which did not appear to feather at all. See Gabb, as above, for the Costa Ricans.

Gómara, Torquemada, and Landa are the only known authorities upon the Indians of this continent who alluded to the proportions which should be observed in the making of the bow or the arrow.

* Vesper Hours of the Stone Age, vol. iii, p. 55.

Herbert Spencer's opinion that arrows had been made by "a differentiated class" did not seem to apply with correc tness to our own tribes. The longest range that I can certify to is not much over one hundred and fifty yards, but the penetrativeness of the arrow is very great. I have seen them buried up to the feathers in pine trees, and have known one man, Mr. Kennedy, of Arizona, to have a headless arrow driven into his lungs. For references to this subject see the works of Mackenzie, Malte-Brun, Cabeza de Vaca, Espejo, and Domenech.

Amulets and Talismans.—Arrows which had been fired under any circumstances of special note became talismans, and were worn attached to the belt, bow, or hat of the owner.

Myths.—There were many references to the arrow, not alone in the myths of the Apaches, but of those of Durango, the Valley of Mexico, California, and elsewhere, as may be seen by citations from Bancroft, Torquemada, Boscana, and others.

While on this subject it might be well to remember that the Romans were called "Quirites," from a word signifying lance, of which they had made a god. See, among others, Salverte, "History of Names."

There are some reasons for believing that the act of divination by arrows, which prevailed extensively all over the Old World, had not been unknown to the aborigines of America. I do not feel warranted in asserting that belomancy did prevail, but instances of throwing arrows and stones "for luck" are given by Ross, Mackenzie, Castañeda, Picart, and Gómara.

Arrow-swallowing seems to have very generally prevailed throughout the American continent.

Reserve Ammunition.—Every Apache kept in the roof of his "jacal" an extra mulberry bow and a collection of reeds to dry for making arrows. Gómara, Sahagun, and Torquemada relate that at a certain time of the year each and every Aztec had to contribute to the public supplies a fixed number of arrows. The number is not stated, but the arrows were to be tied up in "bundles of twenty."

Defensive Armor.—Some of the American tribes have employed defensive armor made either of reeds or, as among the Aztecs, of quilted cotton, called the "escaupil." The Apaches have never employed anything except occasionally a small round shield of rawhide. This fact is noticed by Torquemada and Clavigero.

Poisoned Arrows.—I do not believe in the virulence, or rather in the permanence of the virulence, of the poison made from the putrid liver of deer into which an enraged rattlesnake had ejected its venom; at least, I can say that I have seen men and animals struck by darts alleged to have been so poisoned, but could not perceive that any extra harm had been done thereby. Columbus, according to Herrera, found poisoned arrows among the natives, and there are references to be adduced from Peter Martyr, Castañeda, Clavigero, Corbusier, Herrera, Alegre, and Giralamo Benzoni, the last being apparently the first European to tell the story that the natives of South America compelled their old women to prepare this deadly mixture, and if it did not half-kill the old women they were beaten nearly to death.

Fire arrows have been in use among the Floridians (Picart), the Sioux, and other tribes of the plains, as well as among bands living along the Rio de la Plata, in South America, according to Schmiedel, in Ternaux.

Languages of New Guinea.—Nos. 5 and 6 of the current volume of Petermann's Mittheilungen contain an interesting article by Hugo Zöller, entitled "Untersuchungen über 24 Sprachen aus dem Schutzgebiet der Neu-Guinea-Compagnie."

This article is based on the comparison of twenty-four carefully collected lists of the words in every-day use, and arrives at many valuable conclusions in regard to the relations of the different dialects in a region which has long been regarded as a veritable Plain of Babel. According to the officers of the New Guinea Company, who, naturally, have neither the time nor the inclination to make laborious scientific comparisons between the dialects, there are no less than one hundred entirely distinct languages spoken, in German New Guinea alone. This is, of course, an overstatement, but it is true, according to Herr Zöller, that languages at least as distinct as English and German are to be found within a half hour's journey of each other.

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BOOK NOTICES.

The Antiquities of Tennessee and the Adjacent States, and the State of Aboriginal Society in the Scale of Civilization Represented by Them. A Series of Historical and Ethnological Studies. By Gates P. Thruston. Cincinnati: Robert Clarke & Co., 1890. 8vo, cl., xv, 369 pp., 18 pl. and 246 fig.

Between two and three years ago an ancient cemetery was discovered at Brown's creek, which is about five miles from Nashville. The locality is interesting to the historian as the scene of General George H. Thomas's famous victory, known as the battle of Nashville. The exploration of the ground was entrusted to the Tennessee Historical Society, and General Gates P. Thruston, their corresponding secretary, himself an archæologist and collector, has made known the results of his careful study of the locality in the handsome volume which bears his name. It must not be supposed that General Thruston's book is merely a description of a "local find," for his researches have extended to the great collections of the country, and he has endeavored to give a comparative view of the whole question of the prehistoric Indian in the Mississippi valley, and it is evident from his frequent quotations that he is familiar with the views of prominent anthropologists.

The discoveries made in middle Tennessee, as set forth in General Thruston's work, may be concisely summarized as follows: The mound-builders (for it is convenient to preserve that appellation) were spread throughout the entire State, and corresponding relics of their work are to be found in adjoining States. Their largest settlement seems to have been on Brown's creek. No vestiges remain of houses or habitations of any kind, excepting what Professor Putnam calls "the living line," which indicates by its débris where the walls of the dwelling once stood, but the silent record, which tells with marvelous fullness what these people were, is to be found in their stone graves. Over 3,000 of these graves were found in the cemetery on Brown's creek and 1,000 at a spot not far distant. General Thruston makes this startling assertion: "It is within the bounds of truth to state that after a century of occupation by

the whites the burial grounds of the aboriginal inhabitants within a radius of thirty miles from the center contained a greater number of graves than the aggregate of the present cemeteries of the whites within the same limits."

The Tennessee stone graves exhibit a remarkable variety in their contents, and the pottery in particular is, in many instances, of graceful shape and intricate pattern. Upon the whole, judging from the illustrations which copiously adorn the book, it may be said that the work of the prehistoric people of middle Tennessee shows an advancement in the arts not excelled by that of any other people of their race. General Thruston is very careful to state not only what has been found in these ancient burial places, but also what is entirely absent. After stating that no implements of iron, either in its crude or manufactured state, nor of lead have been found, though a few articles of hammered copper or silver have been discovered, he goes on to say: "No writing or intelligible inscription indicating a written language or decipherable symbol language, no pictograph or tablet or inscription in the higher grades of hieroglyphic writing, no cloth or fabric of the finer grades of manufacture, no piece of regular masonry or of well-built stone wall, or house, or house foundation of stone, or walled well, or house or wall of brick, or remains of architecture worthy of the name have been found in all the vast territory of the Mississippi valley."

It would be better, perhaps, if this very sweeping assertion had been guarded by more precise specification; but if it be borne in mind that reference is intended to the *highest* type possible for comparison—the rectangular bricks and squared stone walls of southern Mexico, for example, in the matter of masonry—then the statement is essentially true.

This decisive statement, modified even as the foregoing remarks seem to require, leads naturally to the most interesting part of the whole subject.

General Thruston, like most American anthropologists, has given up the theory that the mound-builders were men of a superior race, belonging to a lost civilization, but regards them as being in nowise different ethnically from the Indians who inhabited North America at the time of the Columbian discovery. Nevertheless, he seems to be puzzled how to explain the marked superiority of the implements and ornaments found in the stone graves of Tennessee to those pro-

duced by the Shawnees and Cherokees, for example, the supposed modern exemplars of the mound-builders of that region. He points particularly to the gorgets and other shell-work which form a part either of his own collection or of the collections in the museums to which he has had access, and doubts whether anything of equal fineness of workmanship has been produced by Indians within historic times.

The question must be looked at from a higher plane. It would seem probable that at the time of the discovery of America the native Indian, nomad or mound-builder, but especially the latter, had attained to the zenith of his proficiency in the arts. The advent of the white man's civilization was fatal to its progress or even continuance. The history of the world is full of such instances, and it may be laid down as an axiom that when a lower and a superior art come in contact, the former will be displaced by the latter and will gradually disappear. In the words of a careful observer: "The introduction of the brass and iron kettle sounded the death knell of the Indian's skill as a potter." *

Now the difficulty with many explorers is that they compare the productions of the most advanced Indian culture—those, for instance, of the mound-builders, so called—with the degenerated work of historic Indians even of a quite recent existence. This has led, on the one hand, to romantic stories of a great race far superior to the Indian, who built fortifications, temples, and other notable works, and then mysteriously vanished from the continent. On the other hand, as there is no zeal like that of the iconoclast, those explorers whose diligent research and keen insight have cleared away these fanciful imaginings have gone, in some instances, to the opposite extreme, and, in their determination to see nothing but "post-Columbian Indian" in it all, have unwittingly, perhaps, depreciated the artistic value of the relics of the mounds.

The ancient inhabitants of central Tennessee were evidently a settled race. They constructed houses, villages, cemeteries, mounds, and had attained to marked excellency in the making of implements and ornaments. Their work should be compared not with that of

* The process of supplantation is still to be observed. Not long since the writer of this article received a set of beautifully finished "gambling sticks" made by the Hoopa Indians in California. His correspondent stated that they would soon become scarce, and the art of preparing them would probably be lost, as the Indians were learning to use the white man's playing-cards.

the wild tribes, their possible descendants, but, for example, with that of the settled tribes of the lower Mississippi, the Adaizes and Natchez, who are pretty fairly described by the early French writers, and who seem in many respects to have resembled the mound-builders of the upper regions. They were, to some extent, an agricultural people, as we know from the chronicles referred to, which also abound in notices of the extensive traffic which prevailed among the tribes encountered in the valley of the Mississippi.

General Thruston's book is throughout modest in tone, and from its evident honesty of purpose and careful description is entitled to be regarded as one of the most valuable contributions to the archæology of the North American Indian which has appeared. The book has been handsomely gotten up by the publishers and the illustrations have been even lavishly supplied.

ROBERT FLETCHER.

Races and Peoples: Lectures on the Science of Ethnography. By Daniel G. Brinton, A. M., M. D. New York, 1890, N. D. C. Hodges. 313 pp., 8 figs., 9 schemes, 6 charts, 12mo.

This volume is a collection of ten lectures delivered at the Academy of Natural Sciences, Philadelphia, in the spring of 1890, by Dr. Brinton, professor of ethnology in the Academy and of American archæology and linquistics in the University of Pennsylvania. If we are not mistaken, this is the first attempt by an institution of higher learning in our country to found a professorship of anthropology.

The author shows on every page an immense amount of research and an excellent acquaintance with the latest investigators. He has brought together a body of information which lies beyond the reach of most intelligent readers and teachers. The first two lectures are concerned with physical ethnography, the remainder with the problem of race and races. From beginning to end the volume forms an excellent text-book.

What gives it a flavor of its own, its bouquet, is Dr. Brinton's theory of origins. Accepting the theories of the evolutionists and the monogenists as the most plausible in the present state of science, the author devotes the greater part of his argument to the home of man primeval. This must be looked for (1) where the oldest relics

of man or of his industries have been found; (2) where the remains of the highest of the lower animals, especially the manlike apes, have been exhumed, as it is assumed that man himself descended from some such form; and (3) where we know from palæontological evidence a climate prevailed suited to man's unprotected early conditions.

According to the first count, Dr. Brinton looks especially to Portugal, central Spain, and southern France for the birthplace of the race.

On the second point the *Dryopithecus fontani*, whose bones have been disinterred in the upper valleys of the Garonne and in Italy, is the witness. Mr. Darwin's conclusion that our earliest progenitors lived on the African continent is harmonized with the testimony of Dryopithecus by the facts of quaternary geography. When primal man roamed over France, England, and the Iberian peninsula, England and Ireland were united with the mainland and Northern Africa was united to Southern Europe by two wide land bridges, one at the Straits of Gibraltar, one connecting Tunis with Sicily and Italy. The eastern part of the Mediterranean was a contracted fresh-water lake. What is now Africa of the negroes was the whole continent, and Northern Africa was so joined to Europe as to be practically a part of it This land-mass Dr. Brinton calls Eurafrica and the southern continent Austafrica. This subdivision of land-masses gives the author his starting point.

There are two epochs of humanity, the Quaternary and the Alluvial. In the former we have first Pre-glacial times, when primeval man set forth from the cradle of civilization in Western Europe, where now the rudest palæolithic implements are to be seen. In glacial times Europe was severed from Africa, men were dispersed into areas of characterization—the white race in Eurafrica, the black race in Austafrica, the yellow race into Asia, the copper-colored race into America, and the brown race into the island areas. This peopling of the world from the home of the palæolithic implement in West Europe and North Africa works very cleverly for the white and black race, but it plays havoc with the other divisions of the species. Especially with the American race has the author taken great liberties, making them travel during, if not before, the Great Ice Age from Europe by way of a land connection which once existed over the North Atlantic. What he says of them subsequently grows naturally out of this position. They are said to be "a singularly

homogeneous race, which varies but slightly anywhere on the continent, and has maintained its type unimpaired for countless generations. Never at any time before Columbus was it influenced by blood, language, or culture by any other race. This is a bold position, not necessary to the Atlantic origin of the Americans. Indeed, it is easy to affirm the very opposite, and, frankly, in the present state of the inquiry, only conjectural proof can be advanced on either side. Nor does it detract from the great merit of these lectures as the best general treatise we have on races and peoples that they are strung upon a theory which may break at any moment.

In the last chapter the author treats of acclimation, amalgamation, infertility of mixtures, civilization affecting savagery, extinction of races, especially the American Indian and the insular peoples. The charts and diagrams in the volume will be of great use to college professors and others who have not the facilities for working out the problems for themselves.

OTIS T. MASON.

Myths and Folk-Tales of the Russians, Western Slavs, and Magyars. By Jeremiah Curtin. Boston: Little, Brown & Co., 1890, pp. vi–555, 8°.

The first thing to be noticed in Mr. Curtin's book is the spirit in which it is written. The desiccation of mythology, in the modern professedly scientific treatment, has been carried to its last terms. Mr. Andrew Lang, for example, takes no pains to conceal his contempt for the barbarous and, as he considers, utterly irrational conceptions, which he nevertheless thinks worth while to examine. Now, in the opinion of the writer, it is desirable that he who treats of folk-lore should himself possess something of the myth-making faculty. This poetic manner of looking on the world Mr. Curtin does retain, as is illustrated by a very beautiful passage of his introduction. For this quality we are grateful to him and believe that no one can read the work without finding himself agreeably affected in this regard.

The collection is intended to present, for general readers, a selection of tales of a popular character. Mr. Curtin has in an eminent degree the linguistic sense, and his versions, fluent and spirited, compare more than favorably with those of W. R. S. Ralston in his well-known "Russian Folk-Tales," and of W. H. Jones and L. L. Kropf in "The Folk-Tales of the Magyars," printed in 1889 by

the (British) Folk-Lore Society. The volume contains 19 Russian tales from the great collection of Afanasieff, six Chekh stories from works of Z. Radostova and B. M. Kulda, and six Magyar tales taken, with one exception, from the writings of Merényi. An imperfect acquaintance with Russian enables the writer to speak with all praise of the accuracy of the versions from that tongue, an excellence which no doubt exists throughout the book. Here and there the translator has permitted himself the use of Americanisms; these we find an adornment rather than a blemish. Why should not American dialectic phrases have as much right on a printed page as dialectic turns of speech which first see the light in Great Britain? The book will be read with pleasure and profit by those who are fond of folk-literature.

In his brief introduction Mr. Curtin announces certain views respecting theoretic mythology. It will be time enough to comment on these when they are put forward in detail. In presenting his tales he also alludes to the place in European civilization of the peoples from whose languages the narrations are taken. Here, however, it seems, may be introduced a caution. Folk-tales, to speak in general, are Russian, Magyar, or Gaelic only in respect of their language and of the subsidiary ornaments and mythologic dress which the incidents have received, and only in these respects have they relation to ethnology. Considered as to the substratum, they are not national, but international; they belong to a common European and, indeed, also Asiatic stock. This important consideration is well illustrated by the first of Mr. Curtin's tales, called "The Three Kingdoms—the Copper, the Silver, and the Golden." This story belongs to a type very widely diffused, namely, the history of "the youth who frees three kings' daughters from a subterranean prison, but is himself abandoned by treacherous brothers or comrades, underground, whence, however, he soon emerges and unmasks the traitors." (See remarks of R. Köhler, *Jahrbuch für Englische Literatur*, vii, 2°, f., viii, 244 f.) "T. F. Crane, Italian Popular Tales," No. vii, gives a form belonging to Italy, which no one can read without perceiving the essential identity of the Italian and Russian. The oldest version of this tale is to be found in the Mongolian Siddhi-Kûr, where it forms the third narration. In the latter the story is simple and easily intelligible through the mythology of India, whence the Mongols must have obtained it in a Sanscrit form, probably through Buddhistic influences. The nature

of the relationship between the Oriental and European myths rather lends color, in this single instance, to the theory of Benfey that the Western stories were derived, in the middle age, from the Eastern, and have subsequently developed into the multitude of varieties now known to exist in almost every civilized country. A similar remark may be made concerning the last of the Russian tales contained in this volume before us, "Vassilissa, the Cunning," which is curiously identical with *Cath nan Eun*, or, The Battle of the Birds, No. 2 of the Gaelic collection of Campbell. The writer is in possession of an unpublished English folk-tale belonging to the same series. This want of local originality in material is one reason why collectors in some instances have felt called upon to polish up the stories obtained by them and provide these with a suitable literary dress, as has been done in some of the Magyar tales. However, in spite of this general similarity, folk-tales are not useless to mythology. The Russian in particular have a character of freshness and preserve old mythologic conceptions, which have been added to the original element by the people adopting the tales. Does this character, however, imply greater primitiveness, as, for example, when in the tale first noted the hero, who in most European versions of the story is represented to be simply a giant or magician, is called Whirlwind, as Mr. Curtin translates the name? We can only say that to us this greater antiquity appears doubtful, and that we are much disposed to believe that the Russians, in this case, in spite of their objections to European civilization, had paid that civilization the unconscious compliment of borrowing from their southern neighbors. Indeed, even traits from literary French tales of the eighteenth century have found their way into Russian stories.

We are quite ready to admit, however, that there is in the coloring and treatment of these tales by Russians much that is interesting in a mythological point of view, and we cannot too strongly commend the activity and enthusiasm of the translator in pursuing his favorite study. W. W. NEWELL.

De la langue et de l'écriture indigènes au Yûn-nân, par M. Paul Vial, Missionaire Apostolique du Yûn-nân. Paris: Ernest Leroux, 1890.

This contribution to our very meagre knowledge of the language, and especially the undeciphered script of the Lolos of Western China, is, we hope, only the first we may expect from the pen of the

first European who has made himself conversant with the language and curious literature of these aboriginal tribes. M. Vial has been for over three years a missionary among the Ngi-pa Lolos of southern Yunnan, and he has collected in the 23 8vo pages of this pamphlet the most interesting data relating to the language of the people among whom he has been living.

The too short vocabulary given in this study shows in their language the presence of a large percentage (but not more than we expected) of foreign words, both Chinese and Tibetan. In the first class I note *lou*, dragon; in Chinese, *lung; shè*, serpent; Chinese, *shê; to*, rabbit; Chinese, *tú*, etc. In the second class are *tsa*, salt; Tibetan, *ts'a; dza*, eat; Tibetan, *za; tche*, dog; Tibetan, *chyi* (written *k'yi*); *sa*, understand; Tibetan, *shè* (*shes*), etc., etc.

But the most interesting portion of Père Vial's study relates to the script of the Lolos, of which the first specimen was secured some twelve years ago by E. Colborne Baber. Professor Terrien de Lacouperie endeavored to establish a connection between these curious characters and the old Indian script known as the southern Ashoka alphabet. The present work gives them a much less glorious origin. Père Vial says of them (p. 15): "The native characters were formed without key, without method. It is impossible to decompose them. They are written, not with the strokes of a brush, but with straight, curved, round, or angular lines, as the shape chosen for them requires.

"As the representation could not be perfect, they have stopped at something which can strike the eye or mind—form, motion, passion, a head, a bird's beak, a mouth, right or left, lightness or heaviness; in short, at that portion of the object delineated which is peculiarly characteristic of it; but all characters are not of this expressive kind; some even have no connection with the idea they express. This anomaly has its reason. The native characters are much less numerous than the words of the language, only about thirty per cent. Instead of increasing the number of ideograms, the Lolos have used one for several words. As a result of this practice, the natives have forgotten the original meaning of many of their characters." Another natural result of this practice has been that syllabic writing has progressed rapidly among them.

The characters are written like nearly all those used in Indo-China—*i. e.*, from left to right; but, like Chinese, they are written in vertical columns.

According to native traditions, the Black Lolos wrote anciently on hardened dough; the White, or Reclaimed Lolos on linen. At present paper is solely used.

Père Vial finishes his interesting study by giving the text and translation of the native legend of the deluge, one of the most celebrated of their myths, and which is recited at betrothals, marriages, and deaths.

Nearly all Lolo books are prayers or on the subject of divination. Their prayers are series of descriptions or narratives, and Père Vial adds that he has seen none in which the deity is personally and directly invoked.

There are also "family books" or genealogies, in which all purchases, sales, or divisions of family property are recorded and, possibly, some details concerning the tribes; but the author had, at the date of writing, been unable to examine any works of this class.

W. W. ROCKHILL.

"The Golden Bough," a Study in Comparative Religion. By J. G. Frazer, M. A., Fellow of Trinity College, Cambridge. London and New York: Macmillan & Company, 1890.

Professor Frazer is by no means a stranger to the American reading public. Two years ago he published his monograph on "Totemism," which met with a most cordial and well-deserved reception on both sides of the Atlantic. The abundance of citations and references supplied proved him to be an erudite scholar, conscientiously desirous of making clear to his readers every argument or hypothesis advanced in his text.

There is no carelessness in his method. The smallest item is worked and polished with as much attention as the more prominent sections of his thesis.

"The Golden Bough" shows the same skillful massing of facts and an equally brilliant appreciation of their correlation and interdependence, and an equally graceful manner of delineation. This work might be defined as an explanation of anthropological questions from the standpoint of folk-lore and folk-usage; or, rather, a demonstration of the fact that there is scarcely any fragment of folk-knowledge that cannot be made to discharge a most important function in anthropological study.

There are subdivisions treating upon the superstitions clinging about the mistletoe—the traces of tree-worship, still observable in Europe; the quaint customs connected with many rustic games and harvest ceremonials, the ideas of the "folk" about the human hair, nails, etc., etc.—all of which are traced back to pre-Christian ages and modes of religious belief.

There is not a line in either one of these beautifully printed volumes of more than 400 large octavo pages each that will not be read with advantage by the scholar or with fascinating interest by the non-scientific public.

In typographical execution it is one of the best works which have appeared this season.

JOHN G. BOURKE.

The Two Lost Centuries of Britain. By Wm. H. Babcock. Philadelphia: J. B. Lippincott Company, 1890. 12mo, pp. 239.

This little book deals with the obscure and interesting period of British history, from the withdrawal of the Roman legions to the final establishment of the Saxon supremacy, and is, as the author tells us, "the outgrowth of an earnest endeavor to see clearly in my own mind and for my own purposes a part of the life of the sixth century of Britain." The long but hopeless struggle of the native Keltic tribes and their heroic resistance under the half-mythic King Arthur are described in a concise and attractive style. With regard to the gradual mingling of the two races, instead of the utter extermination of one by the other, as some would have us believe was the case, the author says: "From inroad after inroad many [of the native Britons] no doubt had fled beyond the border, but some would accept servitude to remain in their old homes; others would be allowed to live as they had lived before, and still others would come trooping in for work or trade when the wild foragers were known to have taken to farming." The forest and marsh lands were all Keltic, and "along the skirts of the forest Celt and Saxon must have intermingled; along the Wantsum the Scandinavian with the eminently composite Roman."

JAMES MOONEY.

NOTES AND NEWS.

ANCIENT CEMETERIES IN TENNESSEE.—Six miles below Charleston, on the Hiwassee river, in McMinn county, Tennessee, is an old village site on the farm of Mr. John Michael. This village site is on the lowest or first bottom, which extends in a narrow strip for a distance of about six hundred feet along the river bank. The boundaries of the old village can be distinguished by the earth being of a much darker color than that around it and by the great amount of flint chips, broken arrow-heads, fragments of pottery, etc., that are lying on the surface. The village site is just opposite a small island, and North Mouse creek empties into the Hiwassee river about one-fourth of a mile below the lower point of this island.

In March of this year (1890) there was a great freshet in the Hiwassee river, when it rose higher by two feet than ever before. At a point nearly opposite the lower end of the small island the water rose over the bottoms, forming a current directly across them to Mouse creek. The bottom lands had just been plowed, and the swift current washed away the surface to a depth of two feet or more from the point where it broke over to the creek. The space thus denuded comprised about ten acres, leaving the old village site alone unwashed.

At the point where the water first broke over the banks were found a great many skeletons—some of them unusually large. I visited the place a month after the freshet and found the whole bottom that was washed off covered with spots of dark-colored earth and a skeleton or parts of skeletons in every one of these dark spots. They appeared to have been buried without any regularity—some with heads to the west; others to the east, north, and south. I noticed that some of the skeletons had a great many shells packed about them, and I found five or six that had slabs of flat slate rock set up around them in the shape of a box without any stone covering or bottom. The place had been hunted over by relic-seekers, the greater portion of the skeletons were torn out and broken up, and a great many valuable relics were destroyed. Mr. Michael, the owner of the farm, told me that in every direction earthen pots and jars could be seen, but, being soaked by water, they were all

broken in taking up. I picked up the fragments of several that can be put together. Had I been there at the time they were discovered I have no doubt I could have saved them all, as I have found that pottery in this condition, so frail that it crumbles to pieces by handling, can be hardened easily by burning. I have often found earthen vessels in this state in the bottom of mounds, and by removing the earth a little at a time and packing straw or dry weeds around them and burning it the pottery will dry and harden quickly, so it may be handled easily.

On the opposite side of Hiwassee river and a little above this burial-ground and village site are three large mounds which have been partially opened by Mr. Rogan, and near these mounds is a place pointed out as the camp where the Cherokee Indians were kept for months before their removal from East Tennessee. It is said that while they were confined here a great many of them died of measles and are buried on a ridge a mile back from the river.

I have no doubt there are many more skeletons farther back in these bottoms and at the old village site, where the water did not wash off the soil.

Four miles below the Michael burial-ground, on the same side of the Hiwassee river, on the farm of Peter Blevens, is a burial-ground, where all of the graves, so far as known, are walled up on the sides and ends with flat slabs of limestone or slate rock. None of these cists or box-shaped graves appear to be more than 4½ feet long; some of them not more than three feet. This cemetery has never been explored, but one or two graves have been plowed up, and the skeletons in them seem to be folded up into bundles. The stone slabs placed around these skeletons are dressed off on the ends and sides, making a straight edge, so that the stones fit together remarkably well.

JOHN W. EMMERT.

PROGRESS OF CIVILIZATION IN MALAYSIA.—"After beads, copper wire, flint-lock guns, and gunpowder quickly comes European cloth, devoid of all originality, and the civilization of Swedish safety-matches and kerosene, and the leveling process celebrates its triumph, as already in the silent mountains of Sumatra, the naturalist hears with affright the clatter of the sewing-machine, '*kampiong*.'" (Dr. Max Weber in *Internationales Archiv für Ethnographie*, vol. 3, supplement, 1890.)

HUMAN SACRIFICES IN DAHOMEY.—"Besides the common reason of appeasing the gods, the necessity of human sacrifice, from the point of view of the people of Dahomey, rests upon their ideas of the future life. According to them, the future life is a reproduction of the present. Each person retains in that life the same rank that he held in this, unless he has fallen from it by some extraordinary crime. Now, since the king of Dahomey, as the natives say, is the greatest king of all Africa, it is requisite that his court should be the most numerous and most brilliant in the next world. Hence, the Dahomeyan argues, the necessity of immolating on the death of the king the greatest possible number of human victims, and among them his wives, his counsellors, his slaves, to form his court. Numerous captives, too, are sent to him to attest his power and his bravery in combat. The king of Dahomey would think that he was a bad son unless he added each year to the number of the subjects of the dead king by sending him hundreds of captives. For the same reason he sends him messengers chosen from the inhabitants of the earth, the air, and the water. For this purpose they sacrifice a man, a cat, a hawk, and a crocodile. The man will carry to the dead king news of the people on the earth, and the cat, the hawk, and the crocodile in like manner will carry news from their fellows of the earth, the air, and the water." (Father Chautard, ex-missionary to Dahomey, in Bulletin de la Société de Géographie de Lyon, vol. 9, pp. 76–'7, 1890.)

WORSHIP OF PREHISTORIC STONE IMPLEMENTS IN YORUBA, WEST COAST OF AFRICA.—"Nor is Yoruba excluded from the widespread belief that stone implements are thunderbolts. The second great Orisá, or object of worship between man and God (olorun) is Sángó, the thunder god, a name sometimes applied to the stone implements which are believed to be the bolts of Sángó, who is also named Dzakuta, the stone-thrower. The greatest reverence is extended to these stones, which are used as family fetishes, when they are found by ordinary persons. In their practice, when engaged sacrificially, of daubing these stones with blood, palm-oil, etc., the West Africans resemble the Indians." (Sir Alfred Moloney, governor of Lagos, in *Proceedings of the Royal Geographical Society*, October, 1890.)

ABSTRACT

OF THE

Proceedings of the Anthropological Society,

From November 3, 1888, to December 16, 1890.

ONE HUNDRED AND FORTIETH REGULAR MEETING, November 3, 1888.—Robert Fletcher, President, in the chair. Papers read: "A Typical Abnaki Legend,"[1] by Garrick Mallery.

ONE HUNDRED AND FORTY-FIRST REGULAR MEETING, November 20, 1888.—Robert Fletcher, President, in the chair. Names of members-elect announced—active members: C. H. Robinson, Porter Tracy, and Chas. R. Greenleaf. Papers read: "The Human Beast of Burden," by Otis T. Mason; "Navajo Gambling Songs,"[2] by Washington Matthews.

ONE HUNDRED AND FORTY-SECOND REGULAR MEETING, December 4, 1888.—Robert Fletcher, President, in the chair. Names of members-elect announced—active members: D. W. Gill and Cyrus Adler. Papers read: "Notes on Counting and Measuring among the Eskimo of Point Barrow,"[3] by John Murdoch; "Teton Folk-Lore,"[4] by J. O. Dorsey; "Census Enumeration of Alaska Indians," by A. P. Niblack.

ONE HUNDRED AND FORTY-THIRD REGULAR MEETING, December 18, 1888.—Garrick Mallery, Vice-President, in the chair. The election of Lorenzo Yates, of Santa Barbara, Cal., as corresponding member was announced. Papers read: "Myths of the Robin Redbreast in

[1] "The Fight with the Giant Witch," in American Anthropologist, Vol. III, No. 1, p. 65.

[2] American Anthropologist, Vol. II, No. 1, p. 1.

[3] American Anthropologist, Vol. III, No. 1, p. 37.

[4] American Anthropologist, Vol. II, No. 2, p. 143.

Early English Poetry,"[1] by Dr. Robert Fletcher; "Notes on Ojibwa Folk-Lore,"[2] by Dr. W. J. Hoffman.

ONE HUNDRED AND FORTY-FOURTH REGULAR MEETING, January 8, 1889.—Robert Fletcher, President, in the chair. The election of J. D. Middleton to active membership was announced. Paper read: "The Sociological Position of Protection and Free Trade,"[3] by Lester F. Ward.

ONE HUNDRED AND FORTY-FIFTH REGULAR AND ELEVENTH ANNUAL MEETING, January 15, 1889.—Robert Fletcher, President, in the chair. The election of Fuller Walker, Paul Beckwith, and W. F. Morsell to active membership was announced; corresponding member: John Durand, of Paris. The Secretary, Treasurer, and Curator submitted reports of the operations of the Society for the last year. Officers for the next year were elected as follows: President, Robert Fletcher; Vice-Presidents, Garrick Mallery, J. W. Powell, O. T. Mason, and Lester F. Ward; General Secretary, S. V. Proudfit; Secretary to Board of Managers, F. A. Seely; Treasurer, P. B. Pierce; Curator, H. W. Henshaw; Additional Members of the Council, Frank Baker, J. G. Bourke, Weston Flint, W. H. Holmes, and Washington Matthews.

ONE HUNDRED AND FORTY-SIXTH REGULAR MEETING, February 5, 1889.—Col. Garrick Mallery, Vice-President, in the chair. The election of A. P. Montague, W. K. Moorehead, of Xenia, Ohio; Thomas Lee, Geo. D. Seely, G. J. Cummings, and Michael Clancy to active membership was announced. Papers read: "A Note on the Melungeons,"[4] by S. M. Burnett; "Stone Monuments in Southern Dakota,"[5] by T. H. Lewis; "Methods of Study in American Archæology," by Cyrus Thomas.

ONE HUNDRED AND FORTY-SEVENTH REGULAR MEETING, February 19, 1889.—Prof. Otis T. Mason, Vice-President, in the chair. The election of W. W. Rockhill, of Philadelphia, as a corresponding member was announced. Papers: "Observations on the Ameri-

[1] American Anthropologist, Vol. II, No. 2, p. 97.
[2] American Anthropologist, Vol. II, No. 3, p. 215.
[3] American Anthropologist, Vol. II, No. 4, p. 289.
[4] American Anthropologist, Vol. II, No. 4, p. 347.
[5] American Anthropologist, Vol. II, No. 2, p. 159.

can Negro," by Geo. R. Stetson; "On an Ohio Mound," by H. L. Reynolds; "On the Etymology of the Word Tobacco,"[1] by Dr. A. Ernst, of Caracas, Venezuela.

ONE HUNDRED AND FORTY-EIGHTH REGULAR MEETING, March 5, 1889.—Robert Fletcher, President, in the chair. In consequence of the ceremonies incident upon the inauguration of the President of the United States it was thought that the usual attendance could not be expected and the Society accordingly adjourned.

ONE HUNDRED AND FORTY-NINTH REGULAR MEETING, March 19, 1889.—Robert Fletcher, President, in the chair. Papers: "Some Iowa Mounds," by C. H. Robinson; "Sacred Formulas of the Cherokees," by James Mooney.

ONE HUNDRED AND FIFTIETH REGULAR MEETING, April 2, 1889.—Robert Fletcher, President, in the chair. The election of the following members was announced—active members: F. M. Tryon and Thos. D. Ingram; corresponding members: Guiseppe Sergi, of Rome, Italy, and Chas. C. Baldwin, Cleveland, Ohio. Papers: "An account of the German Anthropological Congress at Bonn,"[2] by J. H. Gore; "The Norman-French Element in the English Language," by Arthur McArthur; "Myths of the Thunder-Bird,"[3] by M. Eells.

ONE HUNDRED AND FIFTY-FIRST REGULAR MEETING, April 16, 1889.—Robert Fletcher, President, in the chair. Active members elected: J. Stahl Patterson, F. Von Dachenhausen, and Geo. M. Kober. The following series of papers was read under the general title, "The Aboriginal History of the Potomac Tide-Water Region:"[4] 1. "The Geologic Data," by W J McGee. 2. "Palæolithic Implements," by Thomas Wilson. 3. "Old Camp Sites and Workshops," by S. V. Proudfit. 4. "Shell Heaps," by E. R. Reynolds. 5. "Pottery and Textiles," by W. H. Holmes. 6. "Indian Tribes," by James Mooney.

ONE HUNDRED AND FIFTY-SECOND REGULAR MEETING, May 7, 1889.—Robert Fletcher, President, in the chair. The election of

[1] American Anthropologist, Vol. II, No. 2, p. 133.
[2] American Anthropologist, Vol. II, No. 4, p. 313.
[3] American Anthropologist, Vol. II, No. 4, p. 329.
[4] American Anthropologist, Vol. II, No. 3, p. 225.

Geo. A. Woodward, G. M. Woods, and Henry E. Davis to active membership was announced. Papers read: "Indian Dance at Jemez, New Mexico,"[1] by Gilbert Thompson; "Eggs and Easter," by Otis T. Mason; "A Genesis Myth of the Tusayan (Moqui)," by Cosmos Mindeleff.

ONE HUNDRED AND FIFTY-THIRD REGULAR MEETING, May 21, 1889.—Robert Fletcher, President, in the chair. Active members elected: W. A. Hammond, R. H. Lamborn, and Edwin Willits. Paper. "The Holiday Customs of Ireland," by James Mooney.

ONE HUNDRED AND FIFTY-FOURTH REGULAR MEETING, November 5, 1889.—Robert Fletcher, President, in the chair. Papers read: "The Shinto Faith," by Romyn Hitchcock; "Anthropology at the Paris Exposition,"[2] by O. T. Mason.

ONE HUNDRED AND FIFTY-FIFTH REGULAR MEETING, November 19, 1889.—Robert Fletcher, President, in the chair. The death of Dr. Jas. E. Morgan, a member of the Society, was announced. W. W. Townsend, N. D. Adams, and W. Addis were elected active members. Papers: "Some Omaha Religious Practices,"[3] by J. Owen Dorsey; "A Quarry Workshop of the Flaked-Stone Implement Makers in the District of Columbia,"[4] by W. H. Holmes.

ONE HUNDRED AND FIFTY-SIXTH REGULAR MEETING, December 3, 1889.—Robert Fletcher, President, in the chair. Active members elected: D. S. Lamb, W. T. Harris, S. G. Brock, E. Francis Riggs, and Henry Adams. Papers: "The Cherokee Ball Play,"[5] by James Mooney; "Remarks on American Archæology,"[6] by J. W. Powell.

ONE HUNDRED AND FIFTY-SEVENTH REGULAR MEETING, December 17, 1889.—Robert Fletcher, President, in the chair. The election of the following active members was announced: Thomas Blagden, Alex. T. Anderson, Henry E. Pellen, W. J. Thomson, J. W. Holcombe, Henderson Presnall, Wm. M. Michael, and F. Webb

[1] American Anthropologist, Vol. II, No. 4, p. 351.
[2] American Anthropologist, Vol. III, No. 1, p. 27.
[3] Brief notice in American Anthropologist, Vol. III, No. 1, p. 50.
[4] American Anthropologist, Vol. III, No. 1, p. 1.
[5] American Anthropologist, Vol. III, No. 2, p. 105.
[6] "Prehistoric Man in America." The Forum, January, 1890.

Hodge. Papers read: "Attempts to Promote Prosperity by Limiting Production," by W. A. Croffut; "Human Footprints in Dakota," by H. L. Reynolds; "The Savages of Australia," by Carl Lumholtz.

ONE HUNDRED AND FIFTY-EIGHTH REGULAR MEETING, January 7, 1890.—Robert Fletcher, President, in the chair. The election of R. E. C. Stearns to active membership was announced. Papers: "Vesper Hours of the Stone Age,"[1] by J. G. Bourke; "Remarks on the Archæology of North America,"[2] by J. W. Powell; "Remarks on Ojibwa Ball Play,"[3] by W. J. Hoffman; "Prometheus,"[4] by Walter Hough.

ONE HUNDRED AND FIFTY-NINTH REGULAR AND TWELFTH ANNUAL MEETING, January 21, 1890. The Treasurer and Curator submitted reports relating to the affairs of the Society for the last year.

The following amendment was made to the by-laws:

In Article III strike out the following words from the fourth line: "who reside in Washington or its vicinity." The sentence will then read: "The active members shall be those who, when elected, shall be specially designated as such and shall pay the fee and dues required by Article XV."

In lines 10, 11, and 12 of the same article strike out the words "honorary members shall be those who have contributed by authorship or patronage to the advancement of anthropology," and insert as follows: "Persons who have contributed by authorship or patronage to the advancement of anthropology may be elected corresponding or honorary members." The election of B. H. Warner to active membership was announced. The following officers were elected for the coming year: President, Robert Fletcher; Vice-Presidents, Garrick Mallery, L. F. Ward, J. W. Powell, O. T. Mason; General Secretary, Frank Baker; Secretary to Board of Managers, Weston Flint; Treasurer, Perry B. Pierce; Curator, Henry W. Henshaw; Councilors, J. G. Bourke, J. Howard Gore, W. H. Holmes, Washington Matthews, W J McGee, and F. A. Seely.

[1] American Anthropologist, Vol. III, No. 1, p. 55.

[2] "Problems of American Archæology." The Forum, February, 1890.

[3] American Anthropologist, Vol. III, No. 2, p. 133.

[4] "Aboriginal Fire-making," in American Anthropologist, Vol. III, No. 4, p. 359.

ONE HUNDRED AND SIXTIETH REGULAR MEETING, February 4, 1890.—Robert Fletcher, President, in the chair. It was announced that W. W. Rockhill was transferred from the list of corresponding members to the active list. The annual reports of the Secretary and Treasurer were read and adopted. Papers were read as follows: "The Gentes of the Navajos," by Washington Matthews; "The Gentes of the Apaches," by J. G. Bourke.

ONE HUNDRED AND SIXTY-FIRST REGULAR MEETING, February 18, 1890.—Robert Fletcher, President, in the chair. The following-named gentlemen were announced as elected to active membership: J. W. Pilling, James Kerr, Henry Gannett, Marcus Baker, Sumner N. Bodfish, Theodore Gill, Rogers Birnie, Elroy M. Avery, L. R. Klemm, H. C. Swain, Francis Fowler, C. A. Kenaston, of this city; Archibald Rogers, Hyde Park, N. Y.; George Bird Grinnell, New York City; Joseph Swift Emerson, Honolulu, Hawaii. Papers were read upon: "The Olecranon Perforation,"[1] by D. S. Lamb; "The Origin of the Llav Nous, a Legend of the Shastas," by Mark B. Kerr; "Tibet,"[2] by W. W. Rockhill.

ONE HUNDRED AND SIXTY-SECOND REGULAR MEETING, March 4, 1890.—Robert Fletcher, President, in the chair. Papers read: "Christophe Plantin, the Antwerp Publisher of the XVIth Century," by G. R. Stetson; "The Société d'Anthropologie of Paris," by Thomas Wilson.

ONE HUNDRED AND SIXTY-THIRD REGULAR MEETING, March 18, 1890.—Robert Fletcher, President, in the chair. It was announced that Mr. William Dinwiddie was elected to active membership. Papers read: "Caddoan Migrations Archæologically Considered," by Henry Lee Reynolds; "Has Everyone a Natural Calling?"[3] by L. R. Klemm; "Mythology of the Menomoni Indians,"[4] by W. J. Hoffman.

ONE HUNDRED AND SIXTY-FOURTH REGULAR MEETING, April 1, 1890.—Robert Fletcher, President, in the chair. Papers read: "A

[1] American Anthropologist, Vol. III, No. 2, p. 159.

[2] The principal matter of this paper was published in "The Century Magazine" for November, 1890.

[3] Science, Apr. 11, 1890, p. 232.

[4] American Anthropologist, Vol. III, No. 3, p. 243.

Recent Find in Switzerland of Skeletons and Arms of the Old Roman Period," by J. M. Gregory; "The Origin and History of Salutations,"[1] by Garrick Mallery.

ONE HUNDRED AND SIXTY-FIFTH REGULAR MEETING, April 15, 1890.—Robert Fletcher, President, in the chair. Papers read: "A Collection of Stone Implements from the District of Columbia," by S. V. Proudfit; "Among the Ainos of Yezo,"[2] by Romyn Hitchcock.

ONE HUNDRED AND SIXTY-SIXTH REGULAR MEETING, May 6, 1890.—Robert Fletcher, President, in the chair. The election of A. E. Douglass to active membership was announced. The following papers were read: "Roman Stationery,"[3] by A. P. Montague; "A Teton's Account of the Sun Dance," by J. Owen Dorsey; "Notes on the Amish," by George E. Curtis.

ONE HUNDRED AND SIXTY-SEVENTH REGULAR MEETING, May 20, 1890.—Robert Fletcher, President, in the chair. The following were announced as elected to active membership: Thomas J. Morgan, T. C. Mendenhall, Thomas Dowling, Jr. Papers were read as follows: "A Zuñi Foot-Race,"[4] by F. Webb Hodge; "The Nishinam Game of 'Ha' and the Boston Game of 'Props,'"[5] by R. E. C. Stearns; "Genesis Myth of the Iroquois," by J. N. B. Hewitt.

ONE HUNDRED AND SIXTY-EIGHTH REGULAR MEETING, November 4, 1890.—Robert Fletcher, President, in the chair. The death of the following active members was announced: John J. McElhone and Wm. B. Snell. A paper upon "Transformation"[6] was read by J. W. Powell; also one on "Menomoni Shamanism" by W. J. Hoffman.

ONE HUNDRED AND SIXTY-NINTH REGULAR MEETING, November 18, 1890.—Robert Fletcher, President, in the chair. It was announced that Claude E. Clifton and William H. Doolittle had

[1] "Customs of Courtesy," in American Anthropologist, Vol. III, No. 3, p. 201.
[2] To be published in the Annual Report of the National Museum for 1889–'90.
[3] American Anthropologist, Vol. III, No. 4, p. 331.
[4] American Anthropologist, Vol. III, No. 3, p. 227.
[5] American Anthropologist, Vol. III, No. 4, p. 353.
[6] See article "The Humanities" in The Forum, Dec., 1890.

been elected active members. A series of papers on "Arrows and Arrow-Makers"[1] was read as follows: "Introductory," Otis T. Mason; "Arrow Flaking," De Lancey W. Gill; "Manufacture of Stone Arrow-Heads," W. H. Holmes; "Forms of Ancient Arrow-Heads," Thomas Wilson; "Arrow Feathering and Pointing," Walter Hough; "The Arrow in Modern Archery," Weston Flint; "Poisoned Arrows," W. J. Hoffman; "The Folk-Lore of the Arrow," J. G. Bourke.

ONE HUNDRED AND SEVENTIETH REGULAR MEETING, December 2, 1890.—Otis T. Mason, Vice-President, in the chair. The Society discussed the papers of the previous meeting on "Arrows and Arrow-Makers." Papers were read as follows: "Gambling Sticks from Hupa Valley, California," by Dr. Robert Fletcher; "The New York Meeting of the American Folk Lore Society," by Otis T. Mason.

ONE HUNDRED AND SEVENTY-FIRST REGULAR MEETING, December 16, 1890.—Garrick Mallery, Vice-President, in the chair. The election of Mr. Valentine Hollenbeck as an active member was announced. A paper entitled "The Vigor and Expressiveness of Older English"[2] was read by the President, Dr. Robert Fletcher.

[1] See p. 45 of this issue. [2] Ibid., p. 1.